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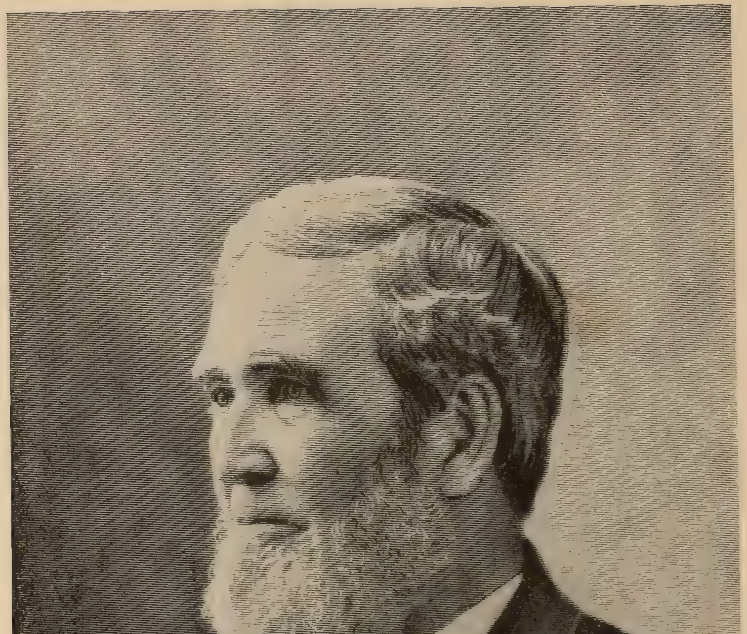
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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

GEORGE WATT, M. D., D. D. S.

A SKETCH.

BY J. TAFT, M.D., D.D.S., CINCINNATI, OHIO.

Doctor George Watt was born on March 14th, 1820, on a farm eight miles east of Xenia, Greene Co., O. His father, Hugh Watt, was born in the north of Ireland, of Scotch parentage; his mother was a native of western Pennsylvania, and was of Scotch parentage also. This portion of Greene Co., at the time this home was established, was comparatively new country; many of the animals of the native forest were still there. Dr. Watt remembers seeing wild deer, wolves, bears, catamounts, wild turkeys, foxes, etc., on the land that then constituted their farm.

He first entered a country school at seven years of age. Schools at that time were very primitive and were generally continued only for three or four months during the year. He remained at the family home till October, 1835, when he left, and went to Adams County, O., to enter a boys' Academy established and conducted by Rev. Wm. Taylor. He entered upon his course, agreeing to pay his way, including boarding and tuition, by services such as he could render on the farm, and in connection with the school. He pursued his studies with great industry and made rapid progress notwithstanding he devoted about one-third of his time to work upon the farm.

This kind of life, away from home and its kindly influences, was a new experience to him; he found an absence of the home surroundings and the sympathy and affection he had so fully enjoyed in his father's house. The treatment he received made the greater impression upon him from the fact that he had not a strong constitution and was often sick. Unfortunately his feeble condition was sometimes regarded as feigned, and because of this he was often-times taxed much beyond his real strength. He had several severe illnesses, and in two or three instances he was supposed to be past recovery. After remaining in the Academy two years he engaged in teaching, but a few miles distant from the Academy. He was thus engaged for three or four years; a part of this time, however, he was engaged in the neighborhood of his father's home. In 1840 he entered a college at Ripley, Brown Co., O., and remained about a year, leaving there in 1841, returned to Greene Co., and there engaged in teaching and the study of medicine, in which he had the late Dr. Samuel Martin, of Xenia, for his preceptor, with whom he not only had superior instruction in medical science and practice, but also had there inculcated, in a receptive mind, the views of the dignity and importance of medical science and practice that have ever characterized him, from that time to the present.

He practiced with and for his preceptor about one year; after which he removed to Bentonville, a small town in Fayette Co., Indiana, where he soon established an excellent practice, especially for a new country. Not being satisfied with his attainments in medical science, he entered the Medical College of Ohio in 1846, and graduated in March, 1848.

April 17th, 1845, he was married to Miss Sarah Jane McConnell, who was a native of Greene County, Ohio, and had always resided with her father's family near Xenia. She as well as the subject of this sketch was the youngest of a large family. The two families here referred to were for a long time neighbors and intimate friends, indeed they journeyed together in coming to Ohio.

After the completion of his medical course, he continued the practice of his profession in Indiana about one year. Near the close of 1848 Mrs. Watt was poisoned by taking arsenic which had been concealed in an apple, intended as was supposed, for the Dr. himself; the case came well-nigh being fatal; recovery from this was slow and the result, as to recovery, was for a long time in doubt. This condition of affairs made it necessary for the Dr. to leave his practice and return to the former home of Mrs. Watt. This change of matters brought him to the practice of medicine in Xenia, in which he remained till the spring of 1850, when he removed to Kenton, Ohio, where he continued in practice about two years. About this time his love for, and inclination to special scientific pursuits, began to be rapidly developed, as was shown by various investigations in which he engaged.

Early in the year 1852, he entered upon the study of dentistry, he was well prepared for such a course of study by his medical knowledge. After some time devoted to this specialty, he formed a co-partnership with J. Taft, of Xenia, Ohio, for the practice of dentistry, which continued for many years. One branch of science to which Dr. Watt had given much attention, during and after his medical course, was chemistry. Some idea of his proficiency in this direction will be apparent when it is remembered, that he had an unusual aptitude in, and liking for this branch, and also that he had for his preceptor, that noted chemist and philosopher, the late lamented, Professor John Locke, who was for many years a teacher in the Medical College of Ohio. In 1853 he prepared and delivered a course of lectures on chemistry in the Ohio College of Dental Surgery. And though Dr. Elijah Slack, M.D., LL.D., had delivered a course of lectures on chemistry in the same institution for one or two years before, yet, this effort of Dr. Watt, was the first attempt to adapt a course of lectures on chemistry to the need of the dental students, and he was the first to prepare and deliver such a course. All work in this line done before him was simply such as was given to medical students. During the time in which this course was delivered, he was not only a teacher hewing out a new course for himself, but he was a member of the class he taught, so that he was in the double capacity of a teacher and a pupil.

He graduated with his class receiving the degree of Doctor of Dental Surgery at the close of the term of 1854.

And though he was a graduate of medicine, with quite an extensive and varied experience in its practice, and had given more than one year's time to the study of dentistry, and was a teacher of acknowledged ability, yet, at the time of his graduation, he passed the same examination as the other members of his class. Immediately after this he resumed the practice of dentistry with Dr. Taft. So well recognized was his ability as a teacher, that he was not long permitted to enjoy the quiet and comfort of a town and country practice, for in the spring of 1855 he was elected Professor of Chemistry and Metallurgy in the Ohio College of Dental Surgery, which position he occupied for several years, and the result achieved by him during this time, in the development of the application of chemistry to dental science and art, has never been excelled if equalled in the same length of time by any teacher in any other branch. He was the pioneer in directing the attention of the profession to chemistry, as one of the chief factors in dental art and science.

He became a member of the Mississippi Valley Dental Society in 1852. In 1854 a prize of one hundred dollars was offered for the best popular essay on Dental Surgery.

Dr. Watt was a competitor for this prize, and after a thorough examination of all the papers presented, it was unanimously awarded to him. He was for several years Secretary of the body, and after many years of service in almost every other capacity, he was elected its President.

In 1856 he was a member of the American Dental Convention (the largest dental body then in existence) held at Hope Chapel in New York.

At the meeting he read a paper on "Topical Remedies," which was extensively published and elicited much attention and discussion, and at the time of its reading drew forth quite a varied discussion. The article is contained in Watt's "Chemical Essays," and is also published in the tenth volume of the *Dental Register*.

He with Dr. Taft, became the owner and editor of the *Dental Register of the West*. This relation was maintained for many years and was only relinquished when Dr. Watt's failing health rendered it imperative. But he has always and even after this severance, been a liberal contributor to the literature of the profession.

He with Doctors Taft and Hammill, established an office for dental practice in Cincinnati, in 1855. This relationship was only sustained for two or three years, the sudden death of Dr. Watt's father made it necessary for him to remove to Xenia, Ohio, when he entered the office and continued the practice that had been established many years before. About this time he made some experiments in micro-photography that were in advance of anything that had been accomplished, and perhaps even attempted up to that time.

In the autumn of 1860, in the time of the great trial of our nation, he promptly tendered his services so far as possible for its rescue; he was accordingly made surgeon of the 154th regiment of Ohio Volunteer Infantry.

His efficiency in that position will be well understood, when it is stated that the sanitary record of his charge was better than than that of any other Ohio regiment.

He was mustered out September, 1864, after being disabled by an injury to the spine, having been crushed by a falling wagon, which resulted in loco-motor ataxia.

After his return from the army he entered into practice, as his feeble health would permit.

In the autumn of 1865 he formed a partnership with Dr. N. W. Williams, after which they conducted a practice in Xenia for about one year, and they established a branch office in Cincinnati of which Dr. Watt took charge.

In 1868 the firm of Watt & Williams purchased the dental depot of J. S. Walters & Co., of Cincinnati, this business they conducted successfully in addition to their dental practice, for about three years when they sold the depot to Spencer and Moore. During this last residence in Cincinnati, his health and strength had gradually become much impaired, and after disposing of his commercial enterprise and resigning his position in the college, where he had been teaching for three years, he closed his city office, and on September 30th, 1871, removed to Xenia, where he hoped to have respite from active labor, but his active brain would not permit much rest.

In the spring of 1872 the firm of Watt & Williams was dissolved, Dr. Williams going to Europe. Dr. Watt found himself unable to carry on the large practice then on his hands, and so he formed a partnership with Dr. D. G. French, which continued a little less than one year, after which he formed a partnership with Dr. E. G. Betty of Cincinnati. This relation was also continued about one year, after which a partnership was formed with Dr. W. H. Sillito, and the business was conducted some two or three years by the firm of Watt & Sillito.

During all this time his health was becoming more feeble and his strength at times seemed well-nigh gone, and it was deemed best that he should retire and no longer attempt the active duties of practice. But he was not content to be idle. In 1881 he took the editorship of the OHIO JOURNAL OF DENTAL SCIENCE, a monthly journal of about fifty pages, and what it has been from the beginning to the present, we need hardly attempt to describe here, sufficient to say, that it occupies an enviable position, with its compeers; its pages are always freighted with matter of interest and profit, and not the least of this by any means, is from the editor. The editorials are always rich in thought and clearly characteristic of the man even in his best days.

During the time of this work, he has been a marvel to all who knew of his condition. Certainly his brain has not shared in the debility which has seemed to pervade all the rest of his organism.

In 1867 he published a volume entitled "Watt's Chemical Essays," in which are published the principal papers which he has written on dental chemistry.

Quite a number of these papers have been published in various journals, not only of the dental, but the medical profession as well, and even in some of the leading newspapers of the country. Unfortunately, the syllabus of his series of lectures on chemistry have never been published.

He has occupied a number of positions of prominence in addition to those already named. He was Vice-President of the American Dental Convention; he was elected President of the American Dental Association on the same day he became a member, the only instance of the kind on record. He was President of the Ohio State Dental Society the first two years of its existence; was twice President of the Mad River Dental Society. In every responsible position he ever occupied, the duties devolving on him were discharged faithfully and efficiently.

Dr. Watt is one of the most easy, fluent and accurate writers in the dental profession, his literary taste was formed upon a high model, and is all that could be expected of one of the highest literary and classical culture. In his case it is rather inborn than acquired, though as some explanation, it may be said that his reading in early life was confined to the purest and best of English literature.

A CASE IN PRACTICE.

BY GEORGE W. KEELY, D.D.S., OXFORD, OHIO.

"There is an ingrafted tendency in all living organized matter to reproduce itself."

We find this the case in considering the causes that result in a crowded and abnormal condition of the teeth in many families—the troubles being directly traceable to inheritance, and are consequently transmitted peculiarities.

In the teeth of every family more or less individuality can be seen, particularly as to size, texture, color and form, and that the departures from the normal type are very often transmitted to their successors. We have often recognized different members of families on examining their teeth and observing the family type. We have known large families, and in almost every member we found the V-shaped dental arch, generally narrow in the region of the bicuspids, with the anterior teeth piled up one upon the other, giving the features a very disagreeable and unnatural appearance—making correct enunciation very difficult, as though a very imperfectly fitting dental plate was being tolerated in the mouth. And it is supposed that all such cases are of a congenital origin.

We have a young lady patient who is minus the right superior lateral, while in her father's mouth, we found two perfectly formed laterals in line on the same side. By some freak of nature the offspring was deprived of this tooth, yet the complement was in the family. In another case the father is minus the superior laterals, as also are six of his children, while the seventh has a deformed right lateral, much like a supernumerary tooth. The father of another family, has no superior laterals, one son has but one, while the two daughters have the complement, the teeth of all being in line. In another family, one daughter retained her temporary cuspids till she was twenty-eight, when both the permanent ones appeared inside the arch. Another, aged twenty-two, had the right cuspid in place, and retained the left temporary one, while the permanent one was just appearing inside the arch. The arches of both were well developed. This same peculiarity had appeared repeatedly in the mouths of their ancestors; and this seemed to be a transmitted family type.

In other cases this inherited type may be confined to a malposed central, lateral or cuspid, appearing in the offspring of a son or daughter, as the result of a law of Nature which reproduces the same deformities as existed in one or more of their ancestors.

We have the model of the teeth of a lady aged twenty-six. Her eight superior front teeth close inside the inferior ones, when the upper incisors are almost out of sight.

Her father had precisely the same deformity, as also his father and an aunt. The mother had well formed dental arches, and a son (there being but the two children) had regular teeth, and normal arches like the mother.

This lady had three children. The oldest, a boy aged five, had the same deformity as the mother. The other two have regular teeth like the father.

We rarely ever find irregularities in the temporary teeth—have never seen more than five or six cases.

The case here illustrated is of a child aged six years when Fig. 1 was taken. She was the survivor of a pair of twins, and to this time was a very delicate child.

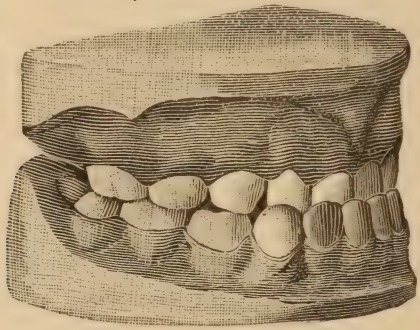

FIG. 1.

It can be seen by this cut that the incisors are locked about one-fourth the length of their crowns, depressing the lip, and giving the features an unpleasant appearance.

I could not learn definitely that any pronounced irregularity had ever occurred in either her father's or mother's families, only that her grandmother, on her father's side, had slight irregularity of the superior front teeth.

Fig. 2 was taken when the little Miss was eight years old.

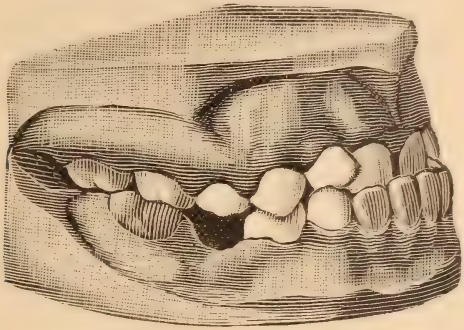

FIG. 2.

It can be seen from this cut that the first permanent molars are erupted, but do not occlude properly. The superior permanent incisors are erupted and locked, as the temporary ones were, the only difference being that the right lateral is riding on the central. The four inferior incisors are also in place. To bring the teeth out of their lock, a vulcanite plate was made to cover the roof of the mouth, and extend over the posterior teeth. A bite was taken to raise the teeth apart just enough to allow the malposed incisors to swing clear when being moved to their normal position.

The plate was made thick on the palatine surfaces of the incisors down to their cutting edges. Slots were made for the reception of wedges. The plate was adjusted to fit firmly, with a masticating surface for the lower posterior teeth. The plate was removed every day and cleansed, and the patient was required to brush her teeth. At the close of the tenth day the incisors were in their normal position, and a retaining plate, made to hold them, was worn for some two months.

When an apparatus of this kind is properly fitted and operated, but very little inconvenience or pain is present. At the age of eleven, Fig. 3 was taken.

At this time the patient had greatly improved; and it can be seen that all her teeth are in line, and the second inferior molars are making their appearance.

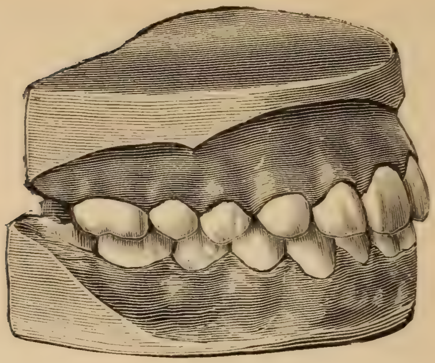

FIG. 3.

She is now fourteen, and all the second molars are in place, and all her teeth are occluding nicely. She is unusually well developed for one of her age, both mentally and physically.

SHALL THE PRECEPTOR BE ABOLISHED?

BY F. W. SAGE, D.D.S., CINCINNATI.

THE opportunities afforded the student attached to the office of a dentist in active practice, for observing the effects of time and wear upon fillings, artificial plates, treatment, etc., form no inconsiderable part of his training for successfully carrying on a practice for himself.

Presupposing that the preceptor is well qualified and skillful, it would appear that the student who closely observes and appropriates to himself the results of his senior's experience and judgment, must enjoy an important advantage over another whose only opportunities for learning have been confined to two or three terms in a dental college. Yet some have questioned whether of two students of equal intelligence, the one having spent years in an office while the other has only a theoretical knowledge of dentistry, the advantages are not about equally balanced when they come to enter college. The argument adduced is that the former must unlearn what is antiquated or positively objectionable in methods of practice, while the latter being free from prejudices and preconceptions is in a better condition of receptivity. But whence does the former derive antiquated or objectionable ideas if not from his preceptor? If the argument is applicable to the student it serves further to show that many preceptors also need to be disabused of false ideas which is freely conceded. The argument if carried out to its ultimate conclusions, proves too much. It becomes derogatory to the intelligence and competence of preceptors, without inquiring whether they are college graduates. It does not and cannot establish the superiority of the training afforded by the dental college alone over that afforded by the dental college course preceded by a preceptorship. Taking a common-sense view of the matter, a student who has had free opportunity to study methods and results as exemplified in the work of his preceptor, must be admitted to have an important advantage over another student who has not enjoyed such opportunity. He will be more likely to accurately forecast the outcome of his ministrations, than will the other. He will regard the question of practical utility, and serviceableness, rather than of showy effect by which another who has not even a borrowed experience to consult, may be unconsciously misled.

With all our vaunted progress as a profession, it must be confessed that history repeats itself in dental science and art, as eleswhere. We revert to the past, and even revive old ideas and methods, in part or wholly. An undercurrent of protest against the rejection of ideas and methods once universally popular, and the adoption of other ideas and methods deemed more worthy, sweeps silent and unseen about the foundations of the towering fabric erected in the name of progress and improvement. It is the conservative element, the influence of which is preserved in traditions, not to any considerable extent on the printed page.

The student who has been brought into living contact with the past, through the medium of a preceptor, is better qualified to judge of the worth of what is new and unique, than another who has no knowledge of absolute methods other than what he gleans from mere references in his text-books. The value of instruction is fully developed only by repetition upon repetition. A sentence descriptive of some single step in a given process may be perfectly intelligible when read out of the text-book, and yet when it comes to its practical application it becomes an enigma. The text-book indeed often becomes a snare to one who for the lack of practical experience is unable to discriminate between the requirements of two cases which to the unpracticed eye appear quite similar, but which appear wholly dissimilar to another of more experience. One of the important prerequisites to the acquirement of useful knowledge, is a distinct conception of what we need to know. This as regards technical knowledge, at least. No student is competent to compare opinions of different authors of standard works, in such a way as to reconcile what may appear to be discrepancies, or to draw his own reasonable conclusions where authorities disagree, unless he has considerable previous knowledge derived from his own observations and inquiries. Knowledge is of course not always wisdom; at the same time it is not apparent that knowledge which includes even much that is erroneous, is worse than no knowledge at all. The student in college is in the very most desirable position to seek confirmation of what his judgment approved before he entered college, and to test what he regards as doubtful in his previous store of knowledge. He is more likely to grasp the special significance of many things which would otherwise pass unnoticed. It is a familiar saying that a man knows more after five years' practice in a profession than after twenty years. This we take to mean that the professional man knows better what he doesn't know at the end of the latter term. The chances are that he has really attained his highest measure of usefulness, when he has fairly awakened to the discovery that he cannot promise much. If the epoch which marks this new era in the professional man's career may be attained at an earlier period by virtue of three or four year's pupilage in the office of a senior, so much the more should the preceptor be held in our esteem.

MINERAL TEETH.

BY DR. L. P. HASKELL, CHICAGO.

WITH all the infinite variety of molds and colors, it is still an exceedingly difficult matter to select teeth suitable for any given case. With access to three stocks of different manufacturers, it is not one time in ten that I can find a set of *plain rubber teeth* that are what I desire, and as I use no gum-sections, my remarks apply mainly to plain teeth.

What are the difficulties in the way?

First as to shapes and sizes. Without alluding by name to any manufacturer, I will say that most of the molds of one of our leading manufacturers are too clumsy in appearance. There are many cases where this style of tooth is needed, but there are more where a more graceful looking tooth is demanded,—a narrower neck, in proportion to the cutting edge.

Another objection to many molds is, the placing of the pins so near the cutting edge, or what is termed a "short bite" tooth. There is no earthly reason why this should be done, and yet I am told at the dental depots they are often called for, but for what purpose I cannot imagine. It is not only unnecessary, but is worse than useless, as it makes the ends of the teeth too thick, bringing the rubber too low, making unnatural the contour of the lingual surface; then it makes it difficult to clear the ends of the lower teeth in securing a proper articulation. Some of the best shaped molds are thus rendered useless for my purposes.

In all stocks of teeth there is too large a proportion of *small* teeth—some too small for anything but a baby's mouth. I see many people wearing teeth so small that I am sometimes led to remark that it is time they had shed their deciduous teeth.

The flange upon the necks of teeth is useless; I invariably grind it off for it is impossible to form the rubber gum properly around the necks of the teeth with it on.

Passing to the bicuspids and molars, very serious features present themselves. A large proportion of them are unlike what they are intended to represent.

With a prominent make of teeth nearly all the bicuspids and molars are longer that the anterior teeth and out of proportion in width.

Every dentist knows that the posterior teeth should be shorter than the anterior, not only as to appearance, for if otherwise much grinding is necessary.

There are very few teeth of any make where the grinding surfaces of the molars and bicuspids are as large as they should be, both in width and thickness, with the exception of Ash's.

Another serious fault with many bicuspids and molars, of one make at least, is found in the fact that the inner cusps of the *upper*, as well as the lower teeth are longest. It is impossible to articulate them without grinding off one or the other. But it were better in artificial teeth, in order to obtain greater freedom of motion in mastication, if there were but little difference in the length of the cusps, of course making deep indentations in the surfaces.

The *arrangement* of teeth in sets, with all the makes, is very faulty from the fact that the anterior and posterior teeth are not selected in proper proportions. Often a set of six large teeth have ridiculously small bicuspids and molars, and *vise versa*. This certainly ought not to be; if the workmen do not know any better, the superintendent should see to it that the molds are properly arranged, and not allow this thing to go on year after year.

The same holds true to some extent in plain *plate* teeth. In these teeth the pins are too often *crosswise*; they should be generally straight or perpendicular, except in short bicuspids and molars. This is a serious fault with Ash's teeth. The reason why they should be thus arranged is, that there is less danger of breakage.

As it is no longer necessary to use plate gum teeth in *full sets*, the gums should be made short at the side, so as to match the receded natural gum.

One of the most serious faults, however, in teeth is in the coloring. While it is possible to secure perfect imitations of the shades of natural teeth, and is often done, as a rule it is difficult to match the natural teeth in selecting full sets even, to say nothing of partial sets. This has not always been the case. Both White and Justi made better colors in their earlier productions than latterly. I know not why it is, unless that in the attempt to make stronger teeth, the material becomes more opaque or less translucent. Certain it is that so far as coloring is concerned, Ash's teeth furnish some of the most perfect imitations of the natural teeth that have ever been produced.

Larger stocks of plain teeth are carried than there is any necessity for. The number of molds could be reduced. What is needed is more of the medium sizes and medium colors, leaving out entirely some of the extremes. There are, as I have said, some sizes fit only for an infant, and there are also some fit only for a horse, unlike anything ever seen in a human mouth.

Of course it would involve more labor, but it would be better if the bicuspids and molars in full sets were shaded a little darker than the fronts, and there are thousands of them too light for use in any case.

If dentists would often call the attention of their dealers to these points, there would soon be changes made, and we should no longer be compelled to spend so much valuable time in selecting teeth, and then have to use what we do not want. We do not want cheaper teeth, they are too cheap already. Which of our manufacturers will inaugurate the reform?

MEDICAL THEORIES.

FROM A LECTURE TO THE CLASS AT THE OHIO COLLEGE OF DENTAL SURGERY, DECEMBER 15TH, 1887.

BY J. S. CASSIDY, M.D., D.D.S., PROF. OF CHEMISTRY AND MATERIA MEDICA.

In the first place permit me to remark that it is not necessarily a great honor to us to merely belong to a department of the science and art of medicine. It is in our acting well our part, where all the honor lies. We acknowledge that we do occupy a portion of the field of therapeutics, but we are not depending exclusively on this fact, for our own progressive measures in theory and practice. The whole world of science and art is as much our Alladin's lamp, as it is that of others. We rub its garniture and the genii answers us and does our bidding as willingly as the behests of others. We therefore claim our share of interest in the inheritance of the scientific knowledge handed down from the earliest ages, and of the different theories, respecting the immediate causes of many diseases which obtain at the present time. And thus to our brief review, in which we may find both amusement and instruction by a cursory examination of some of the ideas and practices of former times.

Although the system of Hippocrates was dogmatic, his principal reliance was upon Nature, and his observations of natural phenomena were followed by a desire and an effort to practice only in imitation of Nature. Later came the Alexandrian school, called Empirical, in which observation alone was applied as a reason for the use of remedies,—no theories as to *how*, or *why*, but only *what*, engaged their attention. They laughed at the Hippocratic expectant study of the causes of disease as a meditation upon death.

Celsus produced a system which combined many of the views of his predecessors as well as his own, and which may be called comprehensive. Galen, however, followed more in the footsteps of Hippocrates, and after him, an interregnum, until the influence of chemistry, received from the alchemists of Arabia, and which was nurtured in Europe by Basil Valentine, Roger Bacon, Albertus Magnus, and Paracelsus, induced Silvius and Thomas Willis to institute a school of chemical physicians.

The discovery of the circulation of the blood by Harvey was followed by the introduction of *mechanics*, in the study of the functions of the body in health and disease. Bœrhave, of Leyden, endeavored to unite these, the chemical and mechanical methods of investigation and treatment, and the great Sydenham of England was one of the ablest advocates of this plan.

There grew up early in the 17th century two opposing theories. The psycho-vitalism of Stahl, and the neurapathology of Hoffman. Stahl claimed that the mind of man governs disease and health, while Hoffman taught that the nervous system was most important in regulating these phenomena. Then came the so-called *sthenic* system which assumed that all depends on stimulation. All diseases, on more or less excitement, and consequent gradations of debility. This theory resulted in the assumption that over-excitement was an important factor in causing disease, and, therefore, sedative treatment, by heroic bleeding and emetics, was largely adopted; a proceeding soon modified by the idea that all diseases were occasioned by local irritation and inflammation, mostly of the alimentary canal, to be allayed by demulcents, counter-irritation, and depletion. A still further modification by the American, Rush, followed, that all acute diseases were but different "states of fever," for which the lancet was the inevitable remedy.

Later still, in our own generation, came the cellular pathology, which taught that all life springs from a germ cell, and that the separate tissues also have the cell for their starting point; and that in the body, life force is supreme, capable of manifesting laws or attributes, like other molecular forces in nature. This latter doctrine easily culminated in the now generally received opinion, that *nearly* all morbid conditions, especially of an inflammatory type, were, or are, due to the influence of microbic organisms, or disease germs. Hence the present "germ theory of disease."

It has long been a recognized fact that the specific germ must be present in order to develop a specific disease, such for instance as small pox, but the number of the species was comparatively limited, until Lister introduced his antiseptic or prophylactic treatment against septicæmia. It is only about twelve years since the accepted fact was promulgated that decomposition of animal substances, such as blood, muscle and pus, cannot take place without the presence of bacteria, and that bacteria are never produced spontaneously, but originate only from previously existing similar organisms. This last theory in regard to the causes of disease is accordingly considered as the most *scientific.* Perhaps, however, it is only so in about the same proportion that its numerous predecessors were superior to those preceding them. Time may relegate the germs to a secondary place in the field of pathology, and even yet there is no reliable key to an explanation of the manner in which their presence is capable of inducing disease, or the methods by which vital force is able oftentimes to resist their evil influence.

Pasteur and Tyndall hold to the idea that the germs destroy a certain portion of the cell matter, and, therefore, to give immunity from a given disease, they propose to introduce into the tissues the same causative microbes, modified by cultivation, or a somewhat similar microbe which will destroy the same protoplasmic pabulum, but without the injurious effects on the system which are usually produced by the disease germ in its natural unmodified state. They base their theory mainly upon the fact that in well-known culture fluids, such as the infusions of hay, and cheese, it has been observed that after a certain time, and when the microbes have increased to a certain extent, they cease to increase and gradually die out for lack of nourishment; hence they conclude that by introducing into the body a germ which is comparatively harmless, as in vaccination, the pabulum for similar germs may be exhausted, and the system thus rendered barren ground, impervious to the attacks of the disease germ.

Two other gentlemen, also eminent scientists, named Klebs and Kline, proceeding upon the same basis, declare that immunity from disease is arrived at by means of the excrement left by the microbes in the human tissues. They point out the unanswerable fact that no species (or similar species) can live in its own excrement and affirm that the immunity from disease enjoyed by those who have once suffered from a particular trouble, or who have been inoculated with germs of a similar nature to that which produces the trouble, is due to this excrement.

Another theory advanced by other parties is that the microbes produce disease by depriving the cells of oxygen, which of course prevents the organs from performing their proper functions, and that by supplying to the body an excess of oxygen artificially, there would be enough of this important element present to satisfy both the microbes and the tissues.

To all these three theories, however, it is objected that they ought to be able to be recognized by microscopic analysis. It is affirmed by their opponents that whether it be the destruction of the pabulum, the leaving of the excrement, or the deprivation of oxygen, any of these ought to be visible effects under the microscope. This criticism, although damaging, is not conclusive, inasmuch as the microscope has not yet advanced sufficiently to detect such minute possible changes.

Last but not least, there is an ingenious theory, maintained by not a few eminent scientists, that the whole phenomena of germ disease and its immunity, is due to the Darwinian law of "the survival of the fittest" in the "struggle for existence." According to these, the cells of the animal body are themselves separate and distinct organisms, with an individual existence and life of their own. These cells (may we call *them* germs?) enter into a regular combat with the disease germs, and when they come off victorious the systemic body retains its strength, while when and where they are defeated, the body or part succumbs to disease.

Now it is well known that in all matters of warfare, the prestige of victory leads to new victories. The troops which have overcome the enemy to-day are better fitted to cope with him to-morrow than are the raw recruits. Applying this to the present instance, the upholders of this theory remark that by supplying a comparatively weak adversary, such as vaccine virus, the cell germs gain an easy victory, which so strengthens their powers that they are able to combat successfully with similar adversaries in the shape of disease germs afterward. This theory accounts for all that is accounted for by any of the others, and also for the fact which has been constantly observed, namely, that immunity from future attacks is in direct proportion to the severity of the struggle against which the cell germs have been able to contend; the greater the battle the greater the strength and powers which they will have developed.

The hope of medicine becoming an exact science depends, not a little perhaps, upon the methods of application of these several theories; and of course all attempts to trace disease to its ultimate source, should be encouraged in every way.

Probably you ask, what have these theories to do with decay of teeth, or with other diseases of the mouth? *I* do not know. I may, however, in return, ask you if either one of these theories is true, (which I am not prepared to believe,) would it not be possible to cultivate prophylactic measures against diseases of the teeth, as well as against the inception of morbid conditions in other parts?

The future will enable you to assist each other in answering these two important questions; and if you fail, if other theories supercede those already known, if any darling child of *your* brain should suffer the penalty of premature earthly nihilism, you can recall the old (though slightly changed) and ennobling thought,

> "It is better to have loved and lost," even a theory,
> Than never to have theorized at all.

THE ANGLE SYSTEM OF REGULATION AND RETENTION.

BY EDWARD H. ANGLE, D.D.S., MINNEAPOLIS, MINN.

In the October number of the Journal I gave a partial description of this system of regulating and retaining teeth. I will now complete the description of the general principles, and during the present year I hope to report a number of interesting cases from practice, treated by this method. But before continuing this description, I wish to make a correction or rather offer an improvement in the manner of applying the traction screw for accomplishing the movement of a tooth backward in the line of the arch.

The tooth to be moved is banded and piped in the usual manner. The pipe, $\frac{3}{32}$ of an inch long, is soldered to the front part of the band at right angles to the tooth and arch, and into this pipe is hooked the angle of the traction screw. Fig. I, 2.

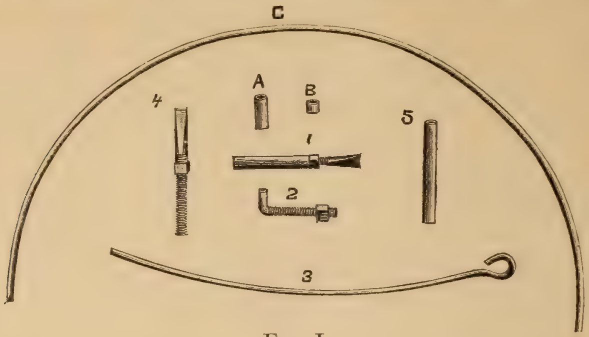

FIG. I.

A longer screw of same gauge being used. The other end of the screw passes through and the nut works against the end of a pipe soldered to the bands encircling and cemented to the teeth, to be used in overcoming the resistance of the tooth being moved. Fig. II shows a cuspid being drawn backwards.

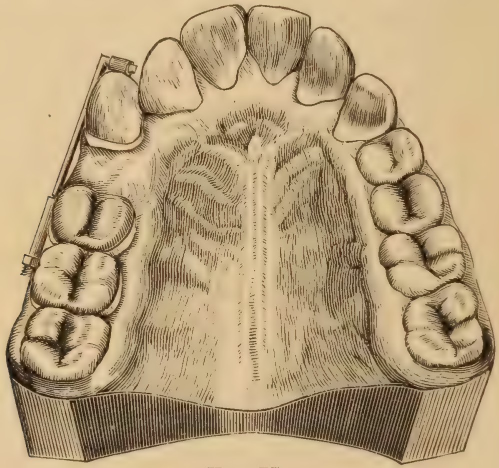

FIG. II.

By this method of applying the screw, I believe the annoyance of the anchor teeth moving forward, to be completely overcome. As these teeth if moved at all must be dragged forward bodily through the alveolus, while the easier and ideal movement of tipping is accomplished in the tooth being moved backwards, and rotation is impossible, although the force is exerted on only one side of the tooth. Elongation of the moving tooth is prevented, as the force exerted by the screw has also the tendency to keep the tooth firmly compressed in its socket. The bands encircling the anchor teeth should be a trifle broader than that ordinarily used, accurately fitted and set with the best cement. (Always first applying the rubber band over all the teeth being operated upon.) It is probably best to encircle all the anchor teeth with bands, attaching each to the pipe with solder. Although in similar cases now under treatment, I am using but one band encircling the first molar, and apparently with the most gratifying results. The screw should be tightened as often as necessary, and as it emerges through the nut and becomes irritating to the cheek it should be snipped off; or the cheek may be protected by a piece of gutta-percha, being warmed and laid over the end of the screw. After the tooth has been moved backward the desired distance, it is retained in position, or it may be removed and replaced by a piece of the plated wire of same size and shape. The end being bent sharply at right angles as it emerges from the pipe at the point where the nut worked. Should the movement or rotation be desirable as is frequently the case with these teeth, it may be easily accomplished either before or after being drawn backward, by means of the rotating lever shown in Fig. I, 3, applied in the usual manner and described in my former article. The end of the lever being inserted into the pipe designed for the angle of the screw.

The expansion of the arch is accomplished by placing a bar of heaviest piano wire against the palatal side of the arch, one on each side. They are held in position by the ends in front passing through little pipes soldered to bands encircling the cuspids. The posterior ends are kept in position by the ends of the wire being bent sharply at right angles and hooked into little pipes attached to bands encircling the last molars. Thus it will be seen that two rigid bars of steel, one on each side, are held firmly in contact with the teeth. Pressure may be exerted by placing the jack-screw, Fig. I, 1, directly across the arch.

The opposite ends resting against the bars of steel; expansion is gained by tightening the nut on the screw. A better method of applying pressure against these two bars is to bend a piece of heavy steel wire to conform to the curve of the arch across from bar to bar. At the side near one end is filed a notch fitting neatly one of the bars which it is to rest against. The other end is beaten slightly flat and a hole drilled through at a point directly opposite the other bar on that side of the arch. Through this hole is placed the screw for pushing as shown in Fig. I, 4. The screw should not be over ¼ of an inch in length. This appliance is now ready to place in position as shown in Fig. IV. It is in position in Fig. V. Pressure is exerted by tightening the nut. After the nut has traveled the length of the screw, the bent wire is removed and straightened a little that the screw may have more action.

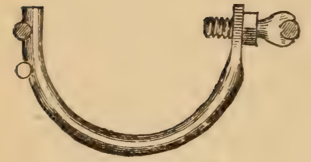
FIG. IV.

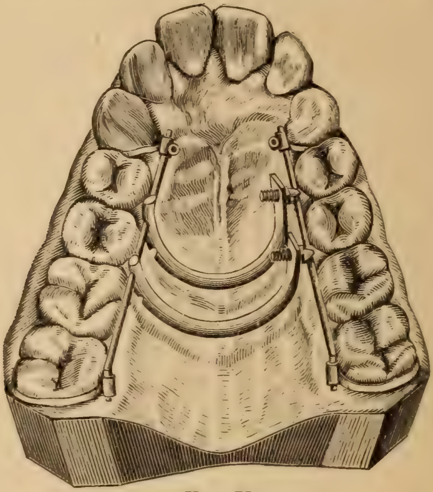
FIG. V.

It will be seen in the engraving that *two* of these screws and braces are used, one is to remain in position while the other is being straightened, thus preventing the teeth from moving back, as would be the case if but one was used. The braces are moved along the bars forward or backward according as pressure is needed. After the sides of the arch have been pressed apart the desired distance, they are retained by a straight bar passing across the arch from cuspid to cuspid, the ends being bent sharply at right angles and hooked into little pipes already described as attached to bands encircling the cuspids. The incisors are drawn into line by means of the traction screw, this cross bar serving as the wire of resistance for the traction screw to pull to.

This method of expansion may be applied to the lower arch as well, as little interference is offered to the movement of the tongue. The points of the screws are prevented from chafing the tongue by pieces of gutta-percha being warmed and laid over them. The movement of elongation is accomplished in the following manner: A suitable tooth is selected on each side of the tooth to be moved, banded and piped in the usual manner. The pipes being soldered to the bands on a line parallel to the axis of the tooth. A piece of the plated wire of suitable length is bent at each end sharply at right angles and hooked into these pipes. To this wire, directly opposite the tooth to be moved, is soldered another of the little pipes $\frac{3}{32}$ of an inch in length, through which the traction screw, Fig. I, 2, pulls, and the nut works against. The angle of the traction screw being hooked into a pipe soldered to a band neatly fitted and cemented to the point of the tooth to be moved. If the tooth is too deeply embedded in the gum to admit of a band being securely fastened to it, a suitable point on the external surface of the crown may be selected, a pit drilled of sufficient size and depth into which may be hooked the angle of the traction screw. The nut is tightened as often as necessary. This movement of a tooth should be very slow; otherwise the pulp may be endangered. After the tooth has been moved the desired distance it may be retained by the screw already in position. Fig. VI shows a central incisor being drawn downward by this method.

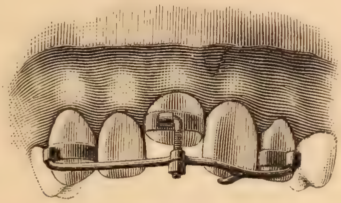

Fig. VI.

If several teeth are to be retained in position, one molar on each side of the arch is banded and piped on a line parallel with its axis. Into this pipe is hooked the ends of a piece of plated wire, bent to conform to the shape of the arch and snugly encircling it. To this wire are attached, by bands and pipes, such teeth as should be supported. Fig. VII shows such a retaining appliance.

This is the general method of using these appliances, but the different ways in which they may be applied are almost innumerable, each one requiring some slight modification. Any dentist of average ability may, after a little experience, easily construct

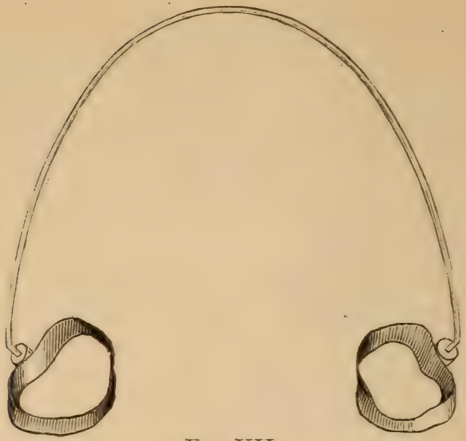

Fig. VII.

and apply them; and in most cases in far less time than is required in constructing a vulcanite plate for the same purpose. So securely are they held in position that the annoyance of displacements is entirely overcome. As the appliance is fitted directly to the teeth we dispensed with impressions and models. Owing to their extreme delicacy and simplicity the inconvenience to the patient is reduced to a minimum; and if sufficient care has been used in their adjustment and the patient be provided with a suitable wrench, he will in most cases do most of the remaining work.

CONGESTION.

BY GALEN, XENIA, OHIO.

Congestion may be defined as an unhealthy accumulation of blood in the blood-vessels, of any part of the body. It generally has its origin in the capillaries and we usually find it there, but it may extend to arterial and venous ramifications, and sometimes even larger trunks.

It is of the first importance in diagnosing disease; for we are enabled by its presence to find the pre-existing cause of morbid action, and are thus enabled to arrive at a clear knowledge of the case in hand. There are three distinct sources of congestion, viz., *irritation or inflammation*, *depression*, and *physical agency*.

When it proceeds from the first cause, always accompanied by the phenomena of over-excitement, we call it *active congestion;* when the accumulation takes place in the arterial ramifications, and the blood is mainly arterial, it is denominated *arterial congestion.* When produced by either of the two latter causes, the accumulation is the interruption of the regular flow, or is the result, and not caused by any positive agency forcing or urging it to a greater flow than is common for the vessel to carry, we call it *passive congestion.*

We return to *active congestion*, and remark in the first place, that if the reader will refer to our former articles on inflammation, he will find that we stated there that in every case of excessive local excitation, there is an increased flow of blood to the part affected, and, therefore, an accumulation in the vessels of the part.

Any excessive or unhealthy excitation is either irritation or inflammation; the former ending where the latter begins. The congestion, therefore, is simply a phenomenon of one of these affections. But authors usually restrict the application of the term to that condition in which the vessels are engorged, and the peculiar symptoms of inflammation have not yet presented themselves. Congestion from this standpoint is simply a phenomenon of irritation. To consider it a disease *per se*, would be taking the sign for the substance.

We must now search for the real seat of the morbid action. It clearly is not in the blood, therefore, it must be in the vessels themselves.

How an action of the vessels may cause but cannot produce constituted congestion, or, to be more explicit, a vessel may exhibit some of the symptoms of congestion, yet the amount of irritation be so small as to be unworthy to be classed under the phenomena of inflammation.

The morbid action here shown is not that which we ordinarily dignify by the name of congestion, but is some peculiar modification of the solid tissues of which a change is an enervation, which constitutes an essential part, brought about by an operation of some excitant, unhealthy in its nature or degree; in short, it is *irritation.* Those who regard congestion as an exclusive factor in the investigation of disease without its concomitant cell-structure and nervous derangement, will fail when they make their diagnosis.

We have healthy excitation and often much accumulation of blood, which is not congestion, simply because it is not morbid. The erection of the penis is an example, in organs that have taken a period of repose and then called into action, the stomach during digestion, and the uterus in menstruation, and finally in any part of the body that is called upon to perform more than ordinary duty.

We have sometimes great distension with accelerated heat and redness, but the parts return to their usual state when the stimulus has ceased, without having suffered inconvenience or injury.

The process is healthy. If, however, the excitement continues a long time and produces derangement of function, it then becomes irritation and the accompanying engorgement is genuine *congestion.* We may now sum up in a few words the phenomena of congestion: Distension, increased redness and heat, a feeling of fulness, weight, oppression but no pain unless there is inflammation. The functions of the part are modified, being often increased when the affection is moderate, but when severe, deranged, diminished, and sometimes wholly suspended.

Hemorrhage is sometimes present in over-distended blood-vessels, and blood-letting is a favorite practice with some practitioners when the parts have a superabundance of blood.

The cause of the blood passing through the tissues in distension, is denied by some microscopists, by stating that the vessels are ruptured and that it is impossible for the blood corpuscles to pass through the walls of the vessels. There is a suspension of the functional consequent upon the derangement of a part, that depends upon the affected part for proper exercise, hence, disordered vision and hearing. And, finally, active congestion may result in disorganization of the part, as the result of a previous condition of extraordinary excitement. But it must be borne in mind that all these effects are not brought about by the accumulation of blood locally, although it is quite a prominent factor, and is no doubt the means through which much injury is inflicted, but still it is only a part of the morbid phenomena, and the inquiring student will look further and beyond into the true pathological condition.

It is a fortunate circumstance that the treatment directed toward the removal of the congestion, is good treatment for the disease. Yet we should not content ourselves with this, but consider the particular irritation which originates the congestion, and thus be able to combat the disease at the outset.

We have active congestion in the brain and lungs arising from irritation, which if not combatted early and skillfully, may result disastrously.

DOES IT PAY?

BY L. P. BETHEL, D.D.S., TOLEDO, O.

We find hesitators everywhere, but notice them particularly in the dental profession. Men whose short-sightedness has materially affected some otherwise good results, and kept them in the rear ranks. These are the men who hesitate to invest a dollar, except for their own comforts, unless they are sure of an immediate return with an increase. We have far too many in the profession who, for this reason shun dental societies altogether, and some are not even subscribers of any dental journal. How can they think they are abreast with the fast advancing profession? Yet they do, and boast of getting ahead of their neighbor Dr. Thinker, by remaining at home and catching his patients while he is in attendance upon some association meeting. The result is obvious. That society meetings are beneficial cannot truthfully be denied, yet this sort of men do not realize that Dr. Thinker is gaining many times the worth that they receive from his transients, while he is absent, even though he may take several weeks' time during the year in attending these meetings. They observe, however, that Dr. T—— is steadily gaining new patients; drawing some that they felt assured were theirs for life. This has been demonstrated almost everywhere.

It seems incredible that there are, in this age of great advancement, many so-called professional men who do not take any periodical devoted to the interests of their profession.

In conversation with a physician recently, the writer ascertained that he expended fifty dollars each year for periodicals pertaining to advancement of his profession, including some of the dental journals; and he said: "The benefits I derive from this source are incalculable. I would not be without them if they cost me three times that amount." This doctor is progressive, and we may add that he is the most prominent and successful physician in his locality. Is it not an equal advantage to the dentist to keep informed of the advancement his profession is making? What are fifteen or twenty dollars compared with the information he can obtain through the dental periodicals alone? Five or six of the foremost dental magazines, and one or two first-class medical publications, are none too many, as no one journal can contain all the beneficial information presented by our best men; but each has its own contributors and peculiar characteristics, and with all combined we get a most complete treatise on the advancement of the whole profession.

But they argue: "It is not essential to our income, we have made money these past years without their aid, and what do the people know about it anyway?" A few years hence will see a change in this direction. The people generally are becoming better educated, and will soon have a higher appreciation of the value of dental services, Dr. Doubter, and will better understand the difference between the progressive and non-progressive practitioner.

"But we haven't time to read." Haven't time? Take time. Let us introduce you to Drs. Abbott, Atkinson, Barrett, Harlan, Taft, and scores of others, who have successfully solved this problem, and without sacrificing the time that should be devoted to their patients.

Gentlemen, this is not a matter of merely a moment's consideration. It is the repairing of a life work. Make observations, think this matter over, and reason for yourself; then seriously ask the question, "Does it pay?" Try it.

PYORRHŒA ALVEOLARIS.

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILL.

[Read before the Ohio State Dental Society, Springfield, Ohio, October, 1887.]

On short notice I have consented to address you to-day on the subject announced, and my only object in doing so is to keep alive the interest in the proceedings of this Society.

From reading many reports of cases treated and the manner of handling the subject by numerous writers during the past few years, many, no doubt, have very vague ideas concerning the causes of loosening of the teeth. First it may be stated that the loosening of teeth brought about by deposits of salivary calculus around their necks seldom, if ever, is accompanied by exuding pus, which does not cease flowing immediately after the removal of the deposits. Second, in all cases of the so-called pyorrhœa alveolaris we have then to deal with conditions not existent as a result of salivary deposits. Third, alveolar pyorrhœa strictly defined is simply the flow of pus from between the gums or alveoli and the roots of teeth. Concomitant with this flow of pus we may have deposits on the roots, as little granules, sheets or rings around the teeth, caries and necrosis of the alveolar process and more or less thickening, and tumefaction of the gum tissue, with a detachment of the peridental membrane more or less complete, even to or around the apices of roots. Many cases present pockets leading from the gingival margin irregular in outline, which, when accidently closed by particles of food or mucus or from any cause, may quickly set up an acute inflammation, so painful as to cause the loss of the tooth by extraction or hopeless loosening. The gums recede from the necks of teeth after the loss of the alveolar process, and from impending operations, as well as from the use of escharotics, and other powerful medicaments. In many cases, however, no reunion is observable. The lower incisors are freer from true alveolar pyorrhœa than all other teeth in the mouth.

I will not rehearse the various theories concerning the etiology of pyorrhœa alveolaris or Riggs' disease as it is called, for you must be familiar with most of them; still it may not be uninteresting to note that two papers have been presented to the Odontological Society of Great Britain recently by Mr. F. N. Pedley and Dr. E. Magitot; the former after reviewing the prominent theories, says in conclusion that "The weight of evidence tends to place pyorrhœa alveolaris in the category of bone diseases. The exposed portion of the alveolar margin and its intimate relation with organs of such feeble vascularity as the teeth, go far to explain why it is this portion of the alveolus that is first affected, and also the usual arrest by the removal of the teeth. Dr. Magitot calls it "Symptomatic Alveolar Arthritis."

"Having referred to the history of and the literature on the disease, the writer says these lesions consist, in fact, of a derangement of an inflammatory nature, affecting at the same time the tissue which has been called the *alveolodental periosteum*, and the bony covering which is subjacent to it, viz., the cement. The term osteoperiostitis was thus justified by the simultaneous lesion of a periosteal and osseous layer. The expression conformed, moreover, to the rule adopted in France on the subject of medical nosology, which gives to every disease a name corresponding to the anatomical lesions which characterize it.

Be that as it may, this last description does not appear to have satisfied all authors, for several of them have gone back to the term *expulsive gingivitis*, which is evidently incorrect, since the gum is never primarily attacked. Others, again, have taken up the term *alveolar pyorrhœa*, which term seems to prevail amongst English practitioners, and particularly with our colleague, Mr. F. Newland Pedley; whilst others, Dr. David, of Paris, for example, propose to call it Fauchard's disease (*Maladie de Fauchard*), after the name of the author, who was one of the first to mention it as described. Following the same idea it is called in England and America Riggs' disease.

If this tendency to multiply without any definite rule the names of the same disease be persevered in much longer, one calling it from one of its symptoms, *pyorrhœa* or *suppuration*, others giving to it the name of an author who has described it with more or less exactitude, extreme confusion will be the result.

Moreover, amongst this diversity of titles the rule, referred to above, of invariably taking as the basis of nomenclature the pathological anatomy of disease, is completely forgotten.

Thus, while regretting to add in our turn a new name to a nomenclature already so long, we feel ourselves, nevertheless, obliged to substitute once more for the designation hitherto employed a title which, faithfully conforming to the precise rules indicated, will establish the nature of the disease with all the exactitude desirable. This title is that of *Symptomatic Alveolar Arthritis.*

The justification of this choice is very simple. The recent researches made in France, particularly those by Mons. Malossez, have clearly established the fact that that which we have described as *periosteum* around the roots of the teeth ought to be considered, not as a membrane, distinct and capable of being dissected off, like the osseous periosteum, but rather as a true ligament.

This manner of looking at it, already indicated by Kölliker in Germany, and by Ranvier in France, in his course of lectures at the College of France, is generally adopted in our country. We, ourselves, are in complete harmony with it, thus accepting the necessity of modifying in our own studies the interpretation which we had, until now, assigned to this part of the dental organ.

As we have already indicated in our previous researches, the causes of this disease should be looked for, not in the local conditions of the mouth or gums, but in certain conditions of the general health. The disease ordinarily attacks a single tooth; occasionally several teeth may become involved, but in the latter case the affected teeth are not necessarily contiguous, they may occupy different positions in the mouth at a distance from each other. Toirac and M. Oudet believe they have observed that the inferior incisors were more particularly the seat. We have not ourselves recognized this peculiarity, which appears to us to belong more especially to gingivitis, which may in certain cases be confounded with symptomatic alveolar arthritis.

The teeth most frequently affected are in order of sequence: firstly, the molars, then the inferior incisors, the bicuspids, the superior incisors, and lastly the canines. We have never observed this disease affecting simultaneously the whole of the teeth. At one time it is situated on one or two inferior or superior incisors, at another the incisors are spared, and one or more molars are affected, ordinarily two or three on different sides of the mouth. Sometimes the disease attacks only a single root of these latter, or it may be only a single side of a root, a circumstance which preserves to the root a certain degree of solidity for a considerable time. The teeth affected with symptomatic alveolar arthritis do not generally present any preceding or accompanying alteration. Caries, for instance, has no connection with this disease, and if this complication is present it is simply an accidental occurrence. It is, indeed, worthy of remark that the local conditions which accompany the development of symptomatic alveolar arthritis appear to be just the opposite to those which accompany the production of caries; the buccal saliva is in fact rather alkaline than acid, an accumulation of tartar more or less abundant is observed in the places where it is usually met with. One might be tempted on the first glance to attribute to this deposit a part more or less active in the etiology of this disease, but it is not so. The deposit of tartar is a secondary matter, and in all cases, its formation being generally uniform and continuous in the same region, it cannot be cited in the production of an isolated and local affection.

Gouty and rheumatic subjects often present this kind of arthritis, as also do individuals attacked with anæmia caused by long illness; but there are no general lesions which exercise a graver influence on the production of this disease than those of albuminuria and, above all, diabetes. As regards the first we are dealing here, as is well understood, not with symptomatic albuminuria, but with what is properly called Bright's disease.

We are in fact confronted with a septic and contagious disease, of which the essential symptoms are an abundant alveolar suppuration, loosening and displacement of the teeth, recession of the gums—in a word, all the conditions suitable to make of this lesion a spot favorable for the action of septic agents.

These agents undoubtedly exist in this disease. The microscopic preparations of pus proceeding from alveolar diseases have betrayed the existence of a large number of organisms of very diverse forms, amongst which it is, if the truth be spoken, still difficult to distinguish the variety which ought to be regarded as the essential and exclusive morbid agent of this disease. Further researches, we are convinced, will enable us to realize the culture of the pathogenic agent peculiar to symptomatic alveolar arthritis.

Some interesting experiments, undertaken by MM. Malassez and Galippe, for this purpose have already put beyond doubt the parasitic nature of this disease, and it is also confirmed by the frequent propagation of the disease from one alveolus to another in the same mouth, as well as by contagion from one individual to another, as observed by different authors and ourselves. All that we now wish to insist upon is the value of antiseptics in the treatment of this disease. With this view we would recommend such applications as alcohol, carbolic acid, perchloride of mercury, etc. For this purpose we have selected the following formulæ:

No. 1.	℞	Hydr. perchlor.	50 c.g.
		Aq. Distil.	1,000 grms.
No. 2.	℞	Acid carbolic crystal	——
		Ether	aa 5 grms.
		Alcohol	10 "
No. 3.	℞	Acid borac.	10 "
		Aq. Distil.	500 "
		Alcohol	50 "

To these formulæ we could have very well added others by employing other antiseptics, such as the permanganates, salicylates, salicylic acid, etc. It will be necessary besides to have recourse to the employment of medicines which will modify the local condition, as well as to attend to the treatment of the general health, paying due regard to the diatheses which influence the disease."

Thus the treatment of symptomatic alveolar arthritis can be summed up in the three following paragraphs:

1st. To render antiseptic the alveolus, the seat of the arthritis.

2nd. To modify the condition of the affected tissues by the application of astringents and caustics.

3rd. To treat the general conditions or diatheses which govern the local manifestations."

These are his conclusions: 1st. The affection characterized by alveolar suppuration, by the loosening and falling of the teeth, ought to be considered as a true symptomatic alveolar arthritis, septic and contagious, and which ought henceforth to remain known by that name in surgical nosography.

2nd. This affection is most often met with under the influence of certain general conditions and diatheses, and as secondary to eruptive fevers, etc., of which it may form either a complication or sequela.

3rd. The therapeutics of symptomatic alveolar arthritis ought to consist essentially in the employment of antiseptics, of local alteratives, astringents, or caustics, without prejudice to the treatment of the general conditions which are the determining causes.

These extracts are presented without comment on account of the want of time to consider them properly. In face of the recent work of Dr. Black on the peridental membrane the view that it is a ligament is simply ridiculous, even such a high authority as Dr. Magitot by giving the weight of his name to the unsupported theory of Malassez, that this membrane is ligamentous makes it highly improbable that this new name, based on a histological myth will be adopted. Were it worth while we could show from comparative embryological-anatomy and histology that the position is untenable. To step aside for a moment and let the theories take care of themselves, you must all realize what a dreadful malady we have to deal with. Caries of the teeth is not nearly so destructive as loosening of the teeth, on account of the ease of arresting it. For genuine discomfort, and general disgust with himself a real case of badly loosened teeth, with pus oozing into the mouth and a foul smell proceeding therefrom, is to a refined and highly organized person about as bad as any other local malady you can think of. These cases are seen almost every day in various stages, and we must do something to help the sufferers. Too little attention is paid to such cases to be of much benefit to the patient. Dentists, as a rule. are not sufficiently bold in operating and they are weak therapeutically. The instruments for operating are generally too clumsy and they are unskillfully handled; too much is attempted at one sitting. It is far better that two or three teeth should be freed from serumal deposits and the bone excised or scraped and the medicines brought in contact with the surfaces operated upon, rather than fail to accomplish anything by operating on a dozen teeth in the same length of time if there be necessity for it; success will not follow any operation unless conscientiously performed. The caustics and escharotics and powerful astringents are not indicated *in* the pockets, but when used they should be applied to the edges or outside on the surfaces of the gums. Perfect cleanliness of instruments, removal of all débris from the mouth and around or between the teeth, the use of washes sufficiently undiluted so as to cause a free flow of saliva into the mouth, the regular medication of the diseased surfaces, not too frequent to destroy newly forming tissue, proper diet, exercise and open bowels are all essentials in the treatment of pyorrhœa alveolaris, or so-called Riggs' disease.

AMMONIA vs. ZINC FILLINGS.

BY LEVITT E. CUSTER, B.S., D.D.S., SPRINGFIELD.

[Read before the Ohio State Dental Society Springfield, Ohio, October, 1887.]

The destruction of zinc fillings has usually been attributed to attrition and the "oral fluids." The modus operandi of the former is easily understood, while that of the latter is more vague of comprehension. It is easy to understand why a phosphate cusp should gradully disappear, but why, in some cases, disintegration of the same filling takes place at and under the gum we cannot so easily answer. Often there are cases where the subgingival destruction exceeds that at the more prominent points. The surface produced by wear is hard and more or less smooth, while that produced by the oral fluids seems to be porous and under process of disintegration.

The oral fluid is often blamed and made to cover a vast amount of ignorance because of its complex nature, but I shall try to prove that it is not an oral fluid as such at all which produces this disintegrating effect so often found at the necks of the teeth. In one instance the presence of some one distinct agent is acknowledged, for it has been recommended to fill the cervical border of the cavity with gutta-percha and complete with phosphate thus avoiding the force of this agent. If the teeth are bathed in the oral fluids entirely, why this peculiar disintegration at just one point? The observing dentist upon reflection will acknowledge the value of these facts and admit the possibility of a destructive agent other than the oral fluids as a whole. Whatever be this special agent, it is evident that it is formed at the point of attack.

The formation of ammonia in the mouth has already been explained by Dr. Watt in his essays. The initial step in the formation of nitric acid is accepted by all who accept this theory of the cause of dental caries. Those who do not accept this theory must admit the possibility of ammonia being formed in the process of putrefaction whether or not it aids in the formation of nitric acid. Putrefaction is denominated such in distinction from fermentation by the presence of nitrogen. The odor of putrefaction is due to this element. The presence of hydrogen uniting with nitrogen in the proportion of H_3N forms ammonia. Again it is claimed that some bodies are often supercharged with ammonia which may be termed ammoniacal diathesis, accounting by another means for the presence of ammonia. In this way it is eliminated by the oral mucous membrane and by the gingivæ directly upon the phosphate filling.

The reaction of ammonia upon zinc fillings I believe to be neutralization of the acidity of the fluid portion. The hardening, or let it be crystallization of the zinc mixture, is due to the acidity of the fluid portion; any acid menstrum has this effect upon calcined oxide of zinc. Dilute sulphuric acid produces an uneven quick-setting cement, whereas acetic produces just the opposite results. But for dental purposes phosphoric acid for its intense hardness and chloride of zinc for its therapeutic effect give the best results, yet these acids when neutralized by ammonia have no hardening effect whatever.

When the cement has once hardened the neutralizing effect of ammonia may be objected to. Now I believe the setting of plaster-of-Paris represents what takes place upon mixing calcined oxide of zinc with a dilute acid. In the former the water enters as water of crystallization, in the latter what may be termed an *acid of crystallization.* Now as heat drives off the water of crystallization so does ammonia neutralize the acid of crystallization, and the oxide of zinc falls down as a white powder. These are facts as experiments have shown. Furthermore, this oxide of zinc thus produced is again capable of becoming a hard mass upon union with phosphoric acid and the process may be again repeated. Upon this principle cement instruments may be cleaned by letting them stand a few minutes in ammonia water.

Having accepted the theory that ammonia is formed in the mouth from whatever source and the above being the reaction of this gas upon the crystallized zinc filling material out of the mouth, it is right that we should conclude that the same reaction takes place in the mouth. Litmus tests have shown an alkaline reaction where zinc fillings are destroyed by the oral fluids so-called. Ammonia, the product of putrefaction, or ammonia eliminated by the gingivæ, are alike in their effect upon phosphate or oxychloride fillings either as a gas or seven hundred volumes dissolved in one of water, this, I believe, to be the destructive agent found in the oral fluid.

SOME SUGGESTIONS ON METAL CAP CROWNS.

BY W. MITCHELL, D.D.S., LONDON, ENGLAND.

[Read before the Ohio State Dental Society, Springfield, Ohio, October, 1887.]

Much has been said, and more has probably been written respecting the various methods of crown work, and possibly as much or more ingenuity has been displayed in this direction than has fallen to the lot of any other portion of our practice.

I do not purpose in this short paper to go into the evolution of crown work, as that is already too well known to the educated dentist to need even a passing notice here. Of the various—and I might almost say numerous—methods of crowning teeth or roots, none present to the dentist or patient a greater assurance of success than the metal cap crown, embodying as it does the three essential features requisite to that end, viz., adaptability to the greatest number of cases, cleanliness, and indestructibility—always bearing in mind only bicuspids and molars are to be treated by this method.

This process of capping admits of restoring articulating surfaces afforded by no other; for with suitable dies, or only just the addition of a small amount of solder here or there, its capacity in this direction is limited only by that of the dentist. While this subject has been pretty freely discussed both in and out of societies, but little of a practical nature in regard to detail has been touched upon, to enable those of a limited experience to more thoroughly understand the manipulation necessary to the successful completion of this kind of work. It is to that end that this paper is presented.

Taking for granted the tooth or root to be capped is in a healthy condition, *i. e.*, if a devitalized tooth, treatment has been completed and roots filled, I then proceed to prepare the tooth or root for the cap; this is done by various means, principally by corundum wheels of suitable shapes and sizes used on the engine, to reduce in height to allow for restoration of bite or to admit of adjustment between adjacent teeth.

In bicuspids or molars where the root is on a line with the gum I find it a good plan to put one, two, and sometimes three good platinum pins in the pulp canals, fitting them first, make them the proper length and then drive them solidly home, they thus afford much support to the cap, especially where it has a good deal of work to perform.

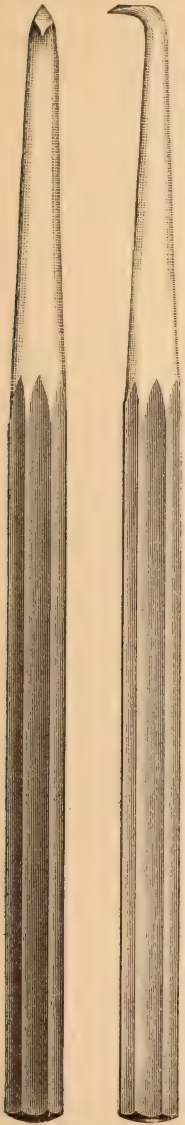
FIG. 1.

After having properly coned the tooth or root, I then go all round the cervical margin with an instrument represented in Fig. 1, removing every vestige of enamel remaining there. This is easily accomplished by inserting the point of the instrument first under the free margin of the gum, and with a draw cut the enamel is trimmed off very rapidly and effectually. It will be observed that convexity of the distal surface of the instruments prevents injury to the gum margin.

The thorough preparation of the neck of the tooth is one of the most important factors in the success of the operation, for upon this the fit and retention of the cap almost entirely depends; hence the absolute necessity for its most careful observance. This done, the tooth is ready for the cap. For this I use coin gold rolled to No. 5 B. P. G. for the band, and No. 3 for the top. The reason I prefer coin gold, it works more uniformly than anything else I have tried, and its color is good in the mouth, besides being quite hard enough to withstand all service it may be subjected to.

In preparing the band I find no model—except the tooth itself—necessary, all others being "a delusion and a snare." I then take a piece of ordinary visiting card and approximate it length and height, then cut plate as required—a piece of heavy lead foil is a good thing for pattern also—then with a pair of medium sized pliers with one jaw flat and the other half round, Fig. 2, I proceed to adapt the plate to the tooth, making the band slightly flaring towards the grinding surface. When I have fitted the band as well as possible, close it a little by squeezing between the fingers so it springs over the tooth when put on for trial, then should it not pass evenly under the gum, trim the band till it follows the contour of the gum; I find a pair of manicure scissors with short but heavy blades the best for cutting the gold used in this work; then having left a line or so for lapping, always having the lap come on the outside for convenience in marking and trimming, mark with the point of Fig. 1 along the lap, remove band from tooth, close it about a line, then solder, this is most easily accomplished over an ordinary bench bunsen, holding the work with a pair of solder pliers, flush the lap nicely; I prefer a lap joint to an edge to edge one, as it is easier to make, can be made just as neatly, and proves a great saving in both time and patience.

Having soldered the band try it on, if it is too tight, place it on the horn of an anvil, when a few light blows with a hammer along the lap will soon stretch it to the required size, and owing to the softness of the gold, in a great many instances it will be found the band may be driven on nicely without any stretching.

Should the lap on the inside need any attention after solder-

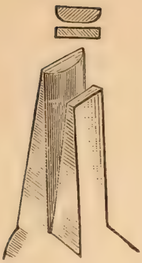

FIG. 2.

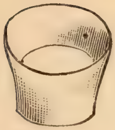

FIG. 4.

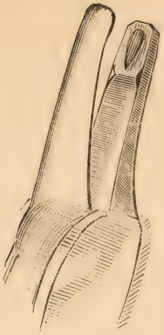

FIG. 3.

ing, a half round file judiciously applied will soon set that all right. I then champfer the edge of the band that goes under the gum, and burnish it, as it then more readily insinuates itself between the gum and the tooth. After the band is started I assist it to where I ultimately want it by driving it on with a steel mallet, using a piece of apple wood or bone about five inches long, checkered on the end to prevent slipping, as a medium, to assist it to its place.

I then judge as to the height the band is to be left, marking it, if necessary to be trimmed, remove, and trim, if necessary, then go around band with the contour pliers, Fig. 3, these produce the result, Fig. 4; these pliers I designed after trying other methods for contouring, and not being satisfied with the results. These pliers I have found to meet all the requirements of the case.

After contouring I take the band and hold its top edge against the flat side of a corundum wheel on the lathe, and by giving the band a slight rotary motion as it is held between the thumb and fingers, a flat surface is secured, it is then ready for the top.

The simplest method I have found for producing these is to take teeth that have been extracted, or models from impressions of natural teeth, investing the roots and crowns in plaster, almost to the grinding surface, leaving the block about two inches high, this is trimmed leaving a base about an inch square. I find squaring, then champfering the corners the best shape for drawing, the face of the block is made flat and left one-sixteenth of an inch wide, this is to act as a guide in the finished die to better assist the operator in utilizing his gold, and later on as a means of holding the top while soldering. After securing the model as described, a sand—or what is better, marble dust—mould is made, this is poured with zinc, which is finished with file and graver, then polished on a lathe.

For the benefit of those who, from some cerebral defect have allowed themselves to believe dental mechanics *infra dig*, would say, all this part of the process can be done by any smart assistant, quite as well as by the possessor of the giant (?) intellect, who fain would shun the essential detail whereby he is placed in a position to receive the fee that others probably have done most to place within his reach. Models for crowns can so easily be made by the process described that any case may easily be contended with. I find by having a typical set of crowns, and a number of irregular shapes, or by simply turning a die around, or only partly so, while swaging almost any combination of articulating surface may be produced.

Another reason why this method is a good one, is its simplicity and cheapness, any one capable of making a die can succeed in any case, something that cannot be said of many of the elaborate, costly, and not always time-saving appliances that are on the market. The die having been made as described will appear as in Fig. 5.

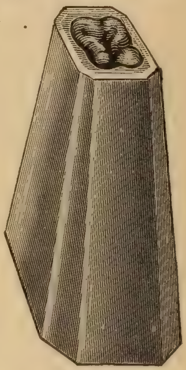
Fig. 5.

No counter die is needed for producing the tops, simply place the gold to be stamped on a piece of lead, a smooth surface can easily be obtained by a blow from a hammer. I find it best in striking up the top to put a piece of heavy tin foil between the gold and lead, this prevents the possibility of any small particle of lead adhering to the gold and producing sweating during the subsequent stages of soldering. After swaging the top the flat margin can be utilized by holding it during soldering, (as mentioned in previons stage of the process,) flush the top with 20 karat solder, this can be done, as with the band, over a bench bunsen burner. Having done this, touch the flat edge of the band with borax, place in the desired position on the top, return to the flame, when top and band will soon unite in the most satisfactory manner, drop into pickle while hot to remove borax, trim off surplus plate with shears, then GRIND off overhanging edges to the required contour, polish same as a gold plate—minus stoning down—and the cap is ready for final adaptation.

It will probably be remarked that no provision has been made for the exit of surplus cement; I think that experience will teach that no special vent is needed, for no matter how perfectly one may appear to have the cap fitted, the cement will find its way out if mixed to the proper consistency.

The best cements I have found to use in this work are Richmond's Crown Cement, and Welch's Crown Cement both kinds producing good results, owing to their smoothness in mixing, and a tendency not to set too rapidly. The cement should be mixed so it will just drop from the spatula, a little experience will soon teach the amount requisite to fill the cap and leave the least possible surplus which will find its way out round the neck of the tooth as the cap is driven home, this is best accomplished by the method suggested for setting the band, the rest of the operation suggests itself.

I claim for this method it is at once the most simple and easy method of making metal cap crowns known, never necessitating a greater outlay of time than an hour and a half to prepare a tooth, make, and adjust crown, and I have made one and fitted it in thirty-five minutes, thus demonstrating that although descriptive detail involves some little time, the practical application of it in experienced hands reduces time to the minimum, and at the same time secures the most satisfactory results.

Correspondence.

"I charge you that this epistle be read."

"ECONOMY."

Editor Ohio Journal of Dental Science:—The article headed "Economy," by Dr. Raffensperger, in the October Journal, calls to mind an experience I had a year or so ago, which for downright cheek and ignorance, beats anything I have ever seen on record.

An elderly gentleman, well dressed, and apparently intelligent, entered my office one day, followed by a young lady of possibly eighteen or twenty summers, whose flaxen hair, blue eyes, and very full cheeks, proclaimed her Teutonic origin. As soon as I was at leisure, I asked the gentleman what I could do for them, whereupon he says in his broken English, "Vell Doctor, I hafe here in mein bocket a set teed, vich pelong to mein virst vife, dis is mein second vife (pointing to the smiling, blushing damsel by his side)—mein virst vife she die aboud a year ago und I bury her mit a old rupper set vat she had. Now you see, dese are de very best golt, und gost me feefty dollar in Ney Yorik. Now mein second vife, she got her teed pulled oud, und I vant to know, if you make her a rupper set for dose und vat you gif me to bood?" His "second vife" took it all good naturedly and seemed to think it was all right. But I think if he ever goes to heaven and his first wife is there, she will meet him at the gate with the "old rupper set" in her hand and protest against his admittance.

Another case was an Irishwoman, who, after I had extracted two badly decayed teeth, insisted on me taking out another one for the same money, saying (when I told her the rest of her teeth were all sound,) "well, they might decay and ache after awhile anyway," and was really indignant when I would not consent to do it.

It is astonishing what disgusting, nauseating things a pair of pretty red lips will often hide. I had a really pretty and refined young lady patient, not long since, that produced from her mouth a set of teeth, that actually nearly knocked me over, so horrible was the odor and disgusting the sight. It was a temporary set, made several years ago, and as the gums had receded she had filled in the vacancy with cotton, which evidently had not been changed for "many moons." I think if Dr. R—— had seen this disgusting mass of cotton, he would consider his discovery of the "wax tightener" a great step in advance for prosthetic dentistry.

Indianapolis, Ind. C. C. Everts, m.d.

Vinegar and Digestion.—According to *Good Health*, experiments have shown that even so small a quantity of vinegar as one part in 5,000 appreciably diminishes the action of saliva upon starch. One part in 1,000 renders it very slow, and twice the latter quantity arrests it altogether. From this it is evident, says our contemporary, that vinegar, pickles, salads and other preparations in which vinegar is used are unwholesome, especially when taken with farinaceous food, such as bread and other grain preparations.

Editor's Specials.

"Write the Vision and make it plain."

A NAUGHTY BIOGRAPHY.

Dr. Franklin, Levi Coffin, and other great, good men having left autobiographies, it has been urged by foolish friends and silly foes that we ought-to-biographize our corporosity. As we have no opinions, but always act on advice, here goes:

George Watt, whose "ugly mug" disfigures the present number, was born of honest, and therefore poor parents, on the day of his birth. He began to breathe in a feeble, indifferent way soon after, and probably tried to make some noise in the world. He could walk when a small boy, and learned to talk before he was ten years old, which is not remarkable, in view of the fact that both his parents had excellent conversational powers. The rumor that he was born talking is slanderous. For a few years the older he got the larger he grew, but finally he quit growing and tried to quit getting older, but failed. He is still living, but will die on the day of his death, unless the event occur in the night, which is not improbable. His rule of conduct is very rigid,—he works when he must, eats and sleeps when he can, and is particular to not talk quite all the time. He has been always a hard drinker, drinking sometimes at the spring, but mostly at the pump. He has never smoked, except when curing bacon, nor chewed—fat beef nor tobacco. He holds that it is right to eat and drink, but not to be merry. A smile throws him into spasms, but he is never happier than when scolding, unless when being scolded. He used to attend society meetings, but always frowned and said nothing—at any rate, what he said amounted to "only that and nothing more," "or words to that effect."—Spokeshave. He has been called small of his age, and even he now regards this slander as true, for though larger than when a small boy, he is older too. He has no friends, and never had. How could he? Yet he has a wife, children and grandchildren who would love him to death in a day, if love were the least bit killing in its nature. He may have foes. If so they keep on his blind side and he has not noticed them. He was "born tired," and is not yet rested; but he does not let this discourage him, for he has learned that "there remaineth a rest," and his elder brother has secured him *one* share of stock in it. This tiredness tells why he has done nothing. Doing nothing is very fatiguing, but doesn't wrench a fellow like doing something, and the wages are a trifle better. He founded the Independent Order of Do-nothings, but failed to keep up his dues, and was dropped from the rolls. The man who does nothing for nothing, and finds himself, is a benefactor—that is, a well-doer, which means he must be well if he can do it. The subject of this sketch was "not built that way," for though he has done nothing industriously, he has never been able to find himself; but his friends have often found him where they didn't wish to, and hence took immediate steps to lose him again, and succeeding, they taunted him as a lost sinner. He has led a straight forward life, mainly for want of energy to go crooked, or into forbidden ways. Though not a sailor, he has had many ships. They are known as hard-ships. He lives under his own vine, which is a source of Concord (grapes) in his family, but he has no figtree, and doesn't care a fig if he hasn't. He can't afford to let such things disturb his peace of mind, for he has but a small piece. He would get a larger piece, made to order, if some one would lend him the money; for even the blessed peacemakers demand cash in advance of him. And, then, he fears he is still wicked; and there is no peace to the wicked. In all autobiographies there are apparent contradictions. In this they are very apparent, but what of that? Discord is the cream of music. Some one acquainted with our subject might tell of a few more things he didn't do, but a single paragraph, as in the above, ought to contain as much as any one should say of himself. The compositor will find "no breaks," without "fat." So let it be.

CRITICISM.

Some are born critics, and generally they are the mildest and most polite of the class. The subject is but little understood. If a man makes a speech or reads a paper in a public meeting, or gives a paper to the press, he is too apt to regard criticism of the speech or paper as a blow at himself; yet it belongs to the critic as much as to himself. Our aim has always been to criticise the speech or paper in such cases, yet we have, no doubt, made mistakes through absentmindedness. When we intentionally criticise a man, it is for his conduct, not for his thoughts. But thoughts expressed and published are common property, and if pernicious in tendency, their influence ought to be annulled, if beneficial, they ought to be commended. Either calls for criticism; and the author should be as calm and content as if one of Cicero's orations were the subject.

We don't criticise unless with the kindest feelings for all concerned. Yet some complain of our criticisms. These complaints usually refer to those printed. We suppose that "our smiling, placid countenance" shows that we have no malice in our heart, in verbal criticism.

"Comparisons are odious," but we propose to resort to one, whether odious or otherwise: On page 435 of Vol. VII of this JOURNAL, an esteemed professional friend charges us with "criticising rather unmercifully —— ———'s paper on Nitrous Oxide gas and his methods of administering it."

In the criticism claimed to be unmerciful the writer was trying to set forth just what he would have said had he been present during the discussions, and permitted to take part. And probably the most *unmerciful* item in the criticism is found on page 335, Vol. VII of the OHIO JOURNAL: "On page 226 we read, 'As soon as the operation is performed the nostrils should be moistened with *aqua ammonia*.' In the name of humanity,—No! Cauterize the delicate and very sensitive mucous membrane of a refined young lady? She ought to send her big brother to horsewhip you."

After trying to arrest close attention by this hurra style of expression, the rest of the paragraph sedately and modestly tells why this caustic alkali should not be used.

Now compare the above with a criticism on *the writer* of this, beginning only a line from where ours on an article published is called unmerciful. We say "on the writer" properly, as a short quotation will show. We had said "We never liked mixed anæsthetics"; and we never did. But see how our friend strikes at us instead of our opinion. Read: "The criticism on the use of gas in combination with liquid anæsthetics in small quantity, like all who condemn its use, is made without the knowledge of a fair and impartial test of the same."

Isn't that a heavy charge to bring against a public teacher?

Analyze it and you will find a triple charge of ignorance, bigotry and dishonesty; yet it has never annoyed us, and if it had been annoying it could have been kept out of the Journal, but had that occurred, we could not now use it as an illustration. Some of our readers know that our experiments with mixed anæsthetics began in 1848, and continued as long as we remained in practice. But our friend didn't know that.

About the sharpest criticism we can recall in our profession is not of remote date. At the late meeting of the International Medical Congress, in the department of dental and oral surgery, a member read a paper. Another member spoke of it in this way: "* * * That such a mass of absurdities could be presented at a meeting of the world's representatives in dentistry is to me astounding, and I protest against its acceptance as the standard by which to judge the intelligence of American dentists." That much is on the paper; but further on the author is brought in, or seems to be, thus: "The essayist has exhibited his complete ignorance of the progress of the past century."

This may not be a correct report—probably is not. A very little alteration would bring it into legitimate lines. If it said, The essay exhibits complete ignorance of the progress of the past century, none could object, if the statement is true, and those hearing or reading the paper could side with the author or critic, as judgment might dictate.

We have heard of no objection to this criticism. The hearers had the light of the speaker's countenance; but had he been absent, and after reading the paper, he had put, in an editorial article, the remarks as reported, they might have been regarded as *unmerciful*. But why? Neither manuscript nor the printed page has a countenance.

A HAPPIFYING EVENT.

The Ohio State Society has met and adjourned. This is not the place to tell what it did between times. All along we felt that the place had been selected as a sort of challenge to the Journal man to attend. And we hoped,—and we hoped. Well, —that we didn't go, doesn't stand first in our long list of disappointments. We wanted to see "the boys"; and of course, would have done all we could to divert their minds from the program of study, and in proportion to our success, would have *spoiled* the meeting, even though not a *microbe.*

But though we failed to get to the meeting, a part of it didn't fail to get here—and that part was so enjoyable and so enjoyed that the Association may go to ——— Cincinnati, next fall, and hold another meeting; and "may we be there to see."

But to straighten out,—The Association adjourned, and immediately parties took choice of trains; and, our former boy, *Father* E. G. Betty, D.D.S., "Salmagundi," etc., came in on us unannounced, followed by the large-faced and larger hearted chief editor of the *Dental Review*, DR. A. W. HARLAN, *himself.* He may have had two hundred and seventeen good reasons for coming; but we mentally ruled out all but one, and believed, without a doubt, that his errand was to see—"YOURS TRULY"; and no one can prove it wasn't.

Because we had not been at Springfield, having but partially recovered from an attack of fever, the rest of the members inferred we were so nearly dead, that it would not pay to look after us. And it wouldn't have paid any but us. But as they all left Drs. Harlan and Betty to find out if we were dead or alive, we yield to the temptation and insert the report of the chairman of the committee. On page 750, Vol. I, *Dental Review*, is the following:

"DR GEORGE WATT.

"We had the pleasure of visiting Dr. George Watt, of Xenia, Ohio, a short time since. In his presence we were content to listen to his reminiscences and discourses on the past history of the science and art of dentistry. He lives again in conversing on the active conflict against ignorance and superstition, although personally not engaged in the exercise of the practice of dental surgery. His eye is undimmed, though for many years he has been a great sufferer from injuries received in the war of the rebellion, his mind is not enfeebled in the least, and his interest in dentists and dentistry is as great as it was twenty years ago. His recent editorial work in the OHIO JOURNAL is as fresh and sparkling as the dignified position of an editor will permit, and we cordially wish him a long lease of life to instruct, amuse or stimulate the younger generations of dentists annually entering the profession."

We would not have dared to say such things; but when, at a dental meeting, you wish to know something, you ask Dr. H. to "Review" the matter, and rest satisfied. Aren't you satisfied with his review of the JOURNAL man? We were more than satisfied with his visit, and would have so rested without his flattering account of the visited. Now we must put forth extra effort on the JOURNAL, partly to sustain the estimate of our friend, yet mainly for your sake, kind reader.

Doctor H. is over-kind, but he can't help it. Then he's working himself to death. Put on air-brakes. He must be helped. "Double-quick" is for only short marches. We wish his to be a long one.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

REMEDY FOR CONGESTED, SPONGY, OR RECEDED GUMS.—Take acid tannicum two ounces, glycerine one drachm. When thoroughly digested apply to gums on a pellet of cotton.

PAIN OBTUNDER AFTER EXTRACTION.—Take sulphuric ether, one ounce, oil of cloves, three drops, and carbolic acid, one drop. Apply to the cavity on cotton and let it remain a few minutes before removing.

PRECAUTIONS IN THE USE OF ANÆSTHETICS.—Where anæsthetics are used for the painless extraction of teeth, or other operations, the dentist should have at hand aqua ammonia, alcohol, nitrate of amyl, hypodermic syringe and galvanic battery to combat any ulterior ill effects that may arise.

THE CRYSTALLIZATION OF PLASTER.—A little chloride of sodium, or better, sulphate of potassium stirred into the water, previously warmed, in which plaster is to be mixed, will hasten the setting. To retard the crystallization use cold water and add a little fine slacked lime.

TO REMOVE PLASTER FROM VULCANITE PLATES.—An easy method to remove the adhering plaster from the inside portion of vulcanite plates, if in no hurry, is to rub a little sweet oil on the plate and let it remain for a few hours, or better over night. The plaster comes off readily and the surface is left smooth.

To Deoxidize Lead or Zinc.—If lead or zinc be overheated they thicken up into an earthy-looking mass of semi-oxidized metal. This may be purified by covering when molten, with pulverized charcoal, or a little beeswax if preferable, which tends to deoxidize the metal by extracting the oxygen with liberation of carbonic acid gas.

Drilling Cavities in Artificial Teeth.—For this purpose some operators have recommended steel burs, kept moistened with turpentine saturated with camphor, and made to turn slowly in one direction for a short time and then in the opposite, while drilling, to preserve the cutting edge of the bur, etc.

The above may answer the purpose, but the quickest and most reliable method we have found is to place in the engine a round, or oval corundum point, moisten with water, and cut the outline of the cavity to be drilled in the tooth, being careful to grind away enough so that the drill when applied will not extend over the borders and chip the facing of the tooth. Having secured a diamond drill, or better, two of them, one medium and the other small pointed, moisten the tooth with water and hold the hand-piece perpendicular to its surface. Commence the drilling with light pressure until the drill has started the cavity and is not liable to slip and scratch the tooth enamel, then increase the force, keeping the cavity moist, until the required depth is reached. Make oblique undercuts in a similar manner. The small pointed drill is then brought into service and retaining pits are readily cut. With the corundum point bevel the margin of the cavity to suit. A cavity can be thus drilled in from five to ten minutes. Care should be taken to hold the hand-piece firmly; and after the drill is started there should be no lateral movement, as the diamond is apt to be twisted from its setting.

To Disinfect Probes and Broaches.—Alcohol three parts, carbolic acid two parts, campor two parts, and oil of cinnamon one part, for disinfecting probes and broaches, has been recommended very highly.—*Dental Review.*

To Blue Iron.—One hundred and forty grammes of hyposulphite of soda are dissolved in a litre of water ($4\frac{2}{3}$ oz. to 1 quart); 35 grammes of acetate of lead are dissolved in another litre ($1\frac{1}{6}$ oz. to 1 quart); the two solutions are mixed, are made to boil, and the iron is immersed therein. The metal takes a blue color, such as is obtained by heating it.—*Revue Scientifique.*

To Cut Rubber Bands from Rubber Dam.—Take a square piece, say three inches square, and fold the rubber four times, in such a manner that it will form an acute cone with the center of the piece at the apex. With sharp scissors cut pieces off the apex the desired width of the band. Many uses will be found for them, but especially for regulating teeth.—J. J. Reed in *Western Dental Journal.*

To Make Sheet Wax.—Dr. J. J. Reed says: Make a mold by pouring plaster into a large platter; when hard, remove it. This will give a large, smooth surface. Wet the mold, so the wax will not stick; rest one edge on the edge of the vessel containing the melted wax; raise the opposite edge, so it will incline a little, and pour the melted wax on it with a large spoon. Any excess will flow back into the vessel. Dip the mold in water; the sheet of wax will float off. If the wax is too hot there will be bubbles in the sheets.—*Western Dental Journal.*

New Elements Discovered.—Kruss and Nilson are reported to have added twelve new elements to the list of those already known, by working on the line of Crookes and Boisbraudau. Their researches have been made on the nitrates of the rare earths, on one which, Didymium, has been broken up into nine distinct elements. There is a faint possibility that these so-called elements may be but isomeric conditions of the original from which they have been fractionated. In other words, they may be but new arrangements of the same atoms which constitute their original.

The Younger Operation.—Dr. E. C. Kirk says: After making the dissection through the gum, I enter the process and make a cut through the bone the desired depth with a wide and measured spear-pointed drill, mounted in a Bonwill surgical engine, or a Bonwill dental engine with a driving wheel of the largest diameter. The spear-pointed drill is flat, probably 3-32 of an inch in width, and sharpened to a keen edge. Having a speed of from 1,000 to 30,000 revolutions per minute at your command, you can make the cut instantly and almost painlessly. I follow the drill cut and form the socket with an instrument like a course tapering fissure-bur, of which I have two sizes, the larger having five and the smaller four very sharp cutting leaflets winding spirally about the shank. The spiral knife of Dr. Robbins and the crib knife of Dr. Ottofy are good socket-formers, but for my own operations I prefer the course bur which I have described.—*Dental Cosmos.*

Explosive Mixtures.—Chlorate of potassa and sulphur are liable to explode on attrition; chlorate potassa and caoutchouc has exploded in the mouth when used as a tooth powder. The fall of a bottle of lycopodium caused an explosion, the fine dust being ignited at a gas-jet. A druggist drying some hypophosphite of calcium over a sand bath, was killed by an explosion. Oxalate and citrate of calcium are liable to explode at high temperatures. Permanganate of potash in combination with any organic substance is apt to explode spontaneously; a mixture of chloride potass., chloride iron, and glycerine exploded in a patient's pocket. Ozone powders, prepared of equal parts of peroxide of manganese, permanganate potass., and powdered oxalic acid, explode spontaneously. An explosion recently occurred by mixing oil of turpentine with strong sulphuric acid in the preparation of terebene. Iodine, treated with ammonia, forms when dry a detonating compound.—*Med. Abstract.*

Regulating Teeth.—All dentists at times are prone to ride hobbies, and in so doing lose sight of some of the practical things that they had well-nigh forgotten. For some years we have been using the Coffin splint-plate for expanding arches, or some other device than a jack-screw. Recently, however, we had a case where the bicuspids of the superior teeth closed within the arch on both sides. The teeth were not long-crowned and the split-plate did not stay in the mouth very well. The boy was not persistent in keeping the plate in his mouth and very little progress was made. After wasting some time we concluded to make a new plate, with a jack-screw extending across the roof of the mouth, and see if it would not do more effective work. The plate was made and cut in halves. In a week's time the arch was spread so that the bicuspids were in line, and we are at this time merely holding them in position. The moral of this little article is, use your resources in order to attain success.—A. W. Harlan in *Dental Review.*

How to Make Matrices.—Dr. D. B. Freeman in the *Dental Review* describes his method of making matrices. He uses Taggart's tin, No. 32 gauge. This material has advantages over other metals because it is inexpensive, easily manipulated, slightly yielding, capable of perfect adaptation in all places, and a fine reflector of light to illuminate the cavity. For a tooth standing alone, or the distal surface of a posterior tooth, cut a straight, narrow strip of tin, and bend it around the tooth, seize the two ends with serrated flat-nosed pliers and stretch closely to the walls of the tooth; then slip over these two ends a steel key [⊓] made from a piece of separating file, which may be used indefinnitely, and bend the two ends apart over the key. When operating on a bell-crowned tooth, cut a strip of tin on a curve, more or less, according to the shape of the tooth, and apply the short, or inner curve, next the gingivæ, which will greatly facilitate restoration of contour. For contact surfaces of molars and bicuspids, take a piece of tin the desired size, double it, and with shears commence at the double edge and cut out a semi-circular piece; then, according to the size of the cavities, cut off the sharp corners obliquely, open the two lips slightly and place in position between the teeth with double edge at the grinding surface. Burnish the gingival edges and extremities closely to the walls of these teeth. If the case presents a V shaped space widest at the gingivæ, insert a triangular wedge between the two lips to hold it firmly in place. This device can be used narrow or wide, according to length of the teeth, and can be burnished to the walls of adjoining teeth even where a V space exists, while the lips may be inserted between the cervical wall and the gingivæ. Often quite a narrow one can be used to advantage to introduce and anchor the first few pieces of gold. Also, when introducing any plastic material, if the surfaces are lubricated with glycerine it can be easily removed without marring the surface of such fillings, or it can remain until they are quite hard, provided it is firmly held so as not to loosen and be swallowed.

Differential Diagnosis of Ulcers of the Face.—Lupus in young people. Attacks skin of ala of nose. Commences in a discolored tubercle. Ulceration superficial and slowly spreading across the cheeks, healing at one part and breaking down at another. No glandular affection. Not usually painful.

Rodent Ulcer in elderly patients. Favorite position—the skin of lower eyelid. Commences often in a brown horny patch. Spreads steadily with no induration. No tendency to heal. No glandular affection. Not painful.

Epithelioma in adult life. Attacks junction of skin and mucous membrane—lips, nose, eyelids. Commences as a small irregular tubercle. Infiltrates from first and extends rapidly. Glands involved. Painful.

Syphilis in children. Affects corners of mouth and margins of nose with deep scars. Commences often in vesicles or blebs. In adults.—Superficial, more or less circular multiple ulcers about any part of face, with scars of healed ones; or deep, unhealthy cavities from breaking down of gummata.

Struma in children. Superficial eczematous ulceration, with crusting on lips and nose, leaving scars behind.—*Christopher Heath, London.—Med. Record.*

Lodgement of an Artificial Plate in the Gullet.—Dr. H. E. Bridgeman says, it does not seem quite clear, from a clinical history, exactly where this foreign body, a small plate to which were attached four teeth, hid itself for so long a time. At any rate, while the patient was sleeping, it slipped from its usual position into the pharynx. Very shortly attempts were made to dislodge it by means of probangs and forceps. Once it was seized, but the patient was suffering from dyspnœa and struggled; the forceps slipped and could not again grasp it. The probang was passed into the stomach without meeting with obstruction. The dyspnœa and dysphagia passed away in a few days. Fifteen months later, the patient meantime having suffered more or less from dyspnœa and cough, with bloody expectoration, he had a violent fit of retching, felt something in his throat, and by means of his finger hooked out the teeth. The subsequent history of the case is not given.—*London Lancet.*

Specific Effects of Certain Metals on Gold when Alloyed with it.—Zinc forms a hard, white, brittle alloy, (when in equal proportions,) does not unite so intimately as lead or tin, and does not destroy ductility.

Tin renders gold intractable to a remarkable degree. The combination is attended with contraction.

Lead renders gold intractable.

Antimony renders gold intractable. One part in 1920 too brittle for successful lamination.

Iron does not sensibly affect malleability.

Mercury dissolves gold and combines with it at all temperatures, but more readily when the gold is in a state of fine division, and when heat is applied.

Silver renders gold more fusible, increases hardness, makes color lighter, but does not materially affect malleability.

Palladium. Merest traces render gold brittle.

Copper hardens and toughens gold, gives deeper color, and does not practically impair its malleability.

Platinum in small proportions hardens, and renders more elastic, without impairing malleability. Makes color pale and dull, if equal weights. Excess of platinum renders alloy infusible in blast furnaces.—*Mitchell's Dental Chemistry.*

Societies.

"Wherewith one may edify another."

THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

THE NINETEENTH ANNIVERSARY WILL BE HELD AT MASONIC TEMPLE, 23D STREET AND 6TH AVENUE, JANUARY 16, 17 AND 18, 1888.

PROGARAMME.

Monday Evening, January 16th, 1888.

Prayer.—Brady E. Backus, D.D., New York.

Address of Welcome.—Dr. Wm. Wallace Walker, New York.

Response.—Dr. Louis Jack, Philadelphia, Pa.

PAPERS.—J. Kimberly Beach, Esq., New Haven, Conn. Subject: "Past and future litigation affecting dentistry." L. D. Shepard, D.M.D., Boston, Mass. Subject: "Prominence of discussion upon one tooth to be deprecated."

Tuesday Afternoon, January 17th, 2.30 o'clock.—PAPER.—G. V. Black, M.D., D.D.S., Jacksonville, Ill. Subject: "An examination of the disturbing forces in physics, with relation to the germ theory." Discussion opened by W. Xavier Sudduth, M.D., D.D.S., Philadelphia, Pa. Followed by W. C. Barrett, M.D., D.D.S., Buffalo, N. Y.; C. T. Stockwell, D.D.S., Springfield, Mass.

Tuesday Evening, January 17th.—PAPER.—Frank Abbott, M.D., New York. Subject: "A contribution to the knowledge of tumors of the jaws."—Carl Heitzmann, M.D., Frank Abbott, M.D. Discussion opened by R. R. Andrews, D.D.S., Cambridge, Mass. Followed by C. Heitzmann, M.D., New York; W. Xavier Sudduth, M.D., D.D.S., Philadelphia, Pa.; Truman W. Brophy, M.D., D.D.S., Chicago, Ill.

Wednesday Afternoon, January 18th, 2.30 o'clock.—PAPER.—J. N. Farrar, M.D., D.D.S., New York. Subject: "Philosophy of correcting irregularities of the teeth." Discussion opened by S. H. Guilford, A.M., D.D.S., Philadelphia, Pa. Followed by E. S. Talbot, D.D.S., Chicago, Ill.; B. S. Byrnes, D.D.S., Memphis, Tenn.; V. H. Jackson, M.D., D.D.S.; Norman W. Kingsley, D.D.S., New York.

Wednesday Evening, January 18th.—PAPER.—Wm. H. Atkinson, M.D. D.D.S., New York. Subject: "Studies of Pyorrhœa Alveolaris, with illustrations from a six weeks' kitten." Discussion opened by A. W. Harlan, D.D.S., M.D., Chicago, Ill. Followed by C. N. Peirce, D.D.S., Philadelphia, Pa.; Edwin T. Darby, D.D.S., Philadelphia, Pa.; James Truman, D.D.S., Philadelphia, Pa.; R. B. Adair, D.D.S., Gainesville, Ga.; M. L. Rhein, M.D., D.D.S., New York; A. R. Starr, M.D., D.D.S., New York; J. N. Farrar, M.D., D.D.S., New York.

CLINICS

Will be held at the New York College of Dentistry, Second Avenue and 23d Street. Clinics commence at 9 A. M., and last till 12 o'clock sharp.

Tuesday, January 17th.—E. C. Kirk, D.D.S., Philadelphia, Pa. Implantation. R. B. Adair, D.D.S., Gainesville, Ga. Filling simple proximal cavities, in Incisors, using Non-cohesive Gold Foil. J. Bond Littig, D.D.S., New York. Contouring front teeth with porcelain. G. H. Winkler, M.D., D.D.S., Augusta, Ga. Immediate extirpation of the nerve, and filling nerve canal. W. C. Wardlaw, D.D.S., Augusta, Ga. Filling approximal cavities of lower teeth with a combination of Gold and Tin. A. W. Harlan, M.D., D.D.S., Chicago, Ill. Treatment of Pyorrhœa Alveolaris. T. T. Moore, D.D.S., Columbia, S. C. Combination Non-cohesive and Cohesive Gold Filling. Dr. C. Frank Bliven, Worcester, Mass. An experiment in Pneumatics, demonstrating its practical success. T. S. Waters, D.D.S., Baltimore, Md. Removable bridge. R. B. Adair, D.D.S., Gainesville, Ga. Treatment of Pyorrhœa Alveolaris. A. G. Bennett, D.D.S., Philadelphia, Pa. Crown and Bridge work. C. N. Peirce, D.D.S., Philadelphia, Pa. Filling with soft Gold Foil under water. W. G. A. Bonwill, D.D.S., Philadelphia, Pa. Demonstrating use of Bonwill Mechanical Mallet. Frank Abbott, M.D., New York. Demonstrating use of Abbott Automatic Mallet. H. C. Register, M.D., D.D.S., Philadelphia, Pa. Treatment of pulpless teeth, filling root and crown cavity at same sitting. Also demonstrating use of Register's Mechanical Mallet. J. F. P. Hodson, D.D.S., New York. Filling teeth, using Watts' Crystal Gold. R. I. Verplanck, D.D.S., Albany. Will fill teeth, using the Verplanck Matrix and Matrix Pluggers Dr. E. S. Gaylord, New Haven, Conn. Will demonstrate the use of his Ivory-pointed Pluggers. Also a new Rubber Dam-Holder. A. H. Gilroy, D.D.S., Boston, Mass. Will demonstrate his Pneumatic Mallet Hand-piece and Chip-blower Attachment. C. Edmund Kells, D.D.S., New Orleans, La. Dental Electrics. J. A. Swasey, D.D.S., Chicago, Ill. Dental Clamps.

We are requested to say that any dentist who has not received a direct invitation, is solicited to consider himself as personally addressed by this general notice, and is assured of a cordial welcome.

For further particulars apply to Dr. W. W. Walker, President, or to Dr. A. L. Northrop, Chairman Ex. Committee, 769 Broadway, New York.

Books and Pamphlets.

THE DENTIST'S MANUAL OF SPECIAL CHEMISTRY by Clifford Mitchell, A.B., (Harv.), M.D. Published by the author at 603 Rialto Building. Chicago, 1887.

This work is designed for one of the Dental College Text Books, and has been written under the supervision of A. O. Hunt, D.D.S., of the Dental Department of the University of Iowa. It is neatly bound and contains 264 pages. The author takes up first, the subject of Physics, and Chemical Physics, giving concise definitions of the principal terms, and includes tables of weights and measures, both American and metric, and short rules for converting one into the other. He then takes up the important subject of, How to Read and Write the necessary Inorganic Chemical formulæ. This knowledge of the principles of chemical reactions is of great importance in studying the action of substances one on another. Several chapters on Metallurgy, Alloys, Amalgams, and Cements, contain valuable information. Inorganic, and Organic Chemistry, are treated at length in good style. It further contains chapters on Fermentation, and Putrefaction, Laboratory work, treating of metals and their reactions, Salivary, and Urinary analysis.

Throughout the work is shown conciseness, and the author's powers of clear expression. It is the first book of the kind ever published, and is an excellent beginning. It certainly merits commendation, and should there be anything omitted we hope to see it brought out in the next edition. The author has spared no pains to give us just such a work as is needed, and it should receive the full appreciation of the whole dental profession.

WHAT TO DO IN CASES OF POISONING. By WM. MURRELL, M.D., F.R.C.P., Lecturer on Pharmacy and Therapeutics in the Westminster Hospital; Examiner in Materia Medica in the University of Edinburgh, and in the Royal College of Physicians of London, etc. First American from the fifth English edition. Edited by FRANK WOODBURY, M.D., Fellow of College of Physicians of Philadelphia; Professor of Materia Medica and of Clinical Medicine in the Medico-Chirurgical College of Philadelphia, etc. 8vo., pp. 158. THE MEDICAL REGISTER COMPANY, Philadelphia, 1887.

It cannot but cause great pleasure to any one who has followed this little book on its journey of usefulness to see its gradual development into the handsome volume which is now before us. If books should be ranked by their usefulness, this one is entitled to be classed with those of the foremost place. Dr. Murrell is already so well known to American readers, that anything which now comes from his prolific pen is sure of a hearty welcome. In this book he gives you no hypothetical treatises upon doubtful specific antidotes, but in the fewest words showers upon you the best thing to do in all cases of poisoning. This is exactly what is needed, as every moment at such times is of infinite value, and all of us don't always know what to do in all the odd cases of poisoning which do occur.

The part of the work which devolved upon the able American editor, Dr. Woodbury, has been especially well carried out. Some of the formulæ and the pharmaceutical nomenclature have been changed, to render it in harmony with our own pharmacopœia. The value of such a book is obvious to every dentist, and no library is complete without some work of this kind. The publishers have evidently spared no expense in the dress of this book, and if subsequent volumes from them will be of equal value and beauty, it will be to all our interest to wish them a most successful career as publishers.

CARMINA SANCTORUM—SQUARE, 8vo., pp. 446. Published by A. S. Barnes & Co., New York, and Chicago, 1887. Price $1.40.

Many dentists are either leaders, or members of church choirs, and to them this book will be welcome for its number of tunes, its variety, and its excellence. The best of the old selections are found here, and many new ones of worth are added. The harmony throughout is admirable, and the arrangement good. One of its prominent features is the mention of each composer, giving the date of birth, and death, if dead. Among the composers we notice the familiar names of Beethoven, Mendelsshon, Weber, Handel, Mozart, and others of the first rank, which alone recommend this work.

Our Aftermath.

An Unjust Disease.—The *New Orleans Picayune* says that hereditary gout is a most unjust disease; the father has all the fun, and the son all the pains.

Old Toper (to dentist): "Doctor, do you use whisky before extracting teeth?"

Dentist: "Certainly; I always take a glass before an operation like this."

Married.—Oldham—Townley—At the residence of Mr. I. D. Fry, in Clifton, Cincinnati, O., on Thursday, October 27, 1887, by Rev. Thos. F. Cortelyou, cousin of the bride, assisted by Rev. Howard Billman, Dr. J. L. Oldham, of New York City, and Miss Anna F. Townley.

It comes high but they must have it.—An American dentist has been fined in Berlin for putting the title "doctor" on his cards. The judge said the law applied to all foreigners; he would fine even the Crown Prince's doctor, Dr. Mackenzie, if he attempted to use the title "doctor" in Prussia.

Parvo in Multum?—The "perpetual motion" craze has once more cropped out. This time the visionary is in Canada.—Ed. *Dental Record.*

Now, brother, the nearest approach to perpetual motion that we know of has been discovered right here in the United States, in the pens of those who are trying to solve the question, "Is Dentistry a Specialty in Medicine?"

He Gained a Point.—The dentist upon examination of the patient's mouth told him that the mass of accumulations about the teeth on the right side of the jaw was at least partially due to his chewing more with the teeth on the opposite side of the mouth. As he passed out he murmured meditatively: "Faith and I was always lift handed in me right arum, but 'tis the first time I iver knowed I was right handed in me lift jaw."

Administering Oil of Birch.—In the *Medical Register* we notice that oil of birch is now administered in two ways, as follows: "One is to deliver the dose into a vial containing water, shake, and swallow. The other is to deliver the dose upon half a teaspoonful of powdered sugar, in a glass containing water, shake, and swallow."

We imagine that this improvement over the old way will be appreciated by young America. The old method of administering, as we recollect, was in its original state. The oil was left in the twig and our father did the administering. He clutched our coat at the collar and it gently crawled up out of the way while he very thoroughly delivered the dose. It was in itself *stirring*, but *swallowed* with difficulty, and the *shaking* came afterwards when we firmly believed that it also was a *vile* method. At any rate we were well *toned up* and it made us feel *very smart.* We hope the new method is as effective.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

"IN VIEW OF PAST HISTORY OF SOWING, WHAT SHALL THE HARVEST BE?"

BY W. H. ATKINSON, M.D., D.D.S., NEW YORK, N. Y.

[Read before the First District Dental Society of the State of New York.]

"THE thing that hath been, it is that which shall be; and that which is done is that which shall be done: there is no new thing under the sun."—Eccles. 1:9. "And the light shineth in darkness; and the darkness comprehended it not."—John 1:5.

Recorded history is like the canyon of tropical and semi-tropical countries—dry for the greater part of the year; and only distributes the fertilizing burden of its stream when pressed upon from upper country by the torrent made up of the accumulated infinitesimal impacts of finest mist that falls so gently as to escape attention in its earliest coming in the clouds which overhang the mountain tops, and is deposited in lightest spray upon the tips of rocks, grass, bract and leaf till aggregated drops become streamlets carrying glad currents of life vivifying the mineral, vegetable and animal forms of planetary inhabitant.

So the sleeping record in us of past molecular experience of predecessors needs the awakening impact of the strong desire to know, on the part of the learner, to stir the stored radiance of heredity within him to irradiate the glamor of virile activity.

Sowing the seed of progress like preparation for career of individual in every example, has two distinct methods of procedure, viz., the first, pure spontaneity without the desire for or knowledge of advantage, and the other a settled purpose of looking out for acquisitions to No. 1!

The first is irradiation, "glamour," of stored radiance rushing into voidness, itself void of calculation of results. The second is the calculated supremacy of the desire in ego to dominate and possess all within the range of cognition of the limited selfishness assuming power it is conscious of not having, but clearly perceives as holding sway in career and destiny of individual associated existences.

These two methods are the aspects of love and wisdom—affection and intellect—the basis of law and logic! Law is the mode of action of principle (ORDER—POWER). Logic is word expression of the order of power.

In the ratio of the comprehension of these, the spontaneity of law and the perspicacity of logic will conspire to illumination for GOOD of those exercised thereby in every word and work. Adequate statement of past events would include utilization of stone wrought into implements of the chase, husbandry, mechanics and war, defensive and offensive known as the "age of stone." After this the more fusible metals were captured and wrought into a better class of implements in furtherance of bettering man's condition of helplessness against surrounding obstacles to his progress as an individual and a community, and is known in history as the "age of bronze."

Then came the discovery and use of iron, which is still the predominant factor of civilization, progress and refinement, and was the immediate incentive to the discovery and utilization of steam.

Thus the age of iron merged into the age of steam and electricity which floods the fields of progress with such dazzling brilliancy as to astonish and confuse all observers who are not well grounded in the faith and knowledge of the *reign of law* in man and his surroundings.

To regret the precedent steps in any career is to deny the validity of the plan upon which it is projected.

In like manner to complain of the darkness and inadequacy of early history is to deprive ourselves of its highest utilization.

I have often complained that former teachers directed attention to the who and the why rather than to the what and the how of the problems and processes they attempted to comprehend, explain, and exemplify. Personalization and minification of general principle led to the inquiry of "Who is it? Who did it? And why was it done?" Which opened the door to the inquiry of "What did it? And how was it done?" When we have determined the proper solution of these two queries we shall have compassed the field of practical responsibility—of daily duty to those we serve.

History shows that the healers followed the lead of the priests, excommunicating recusant members with whom they dealt, until better counsels prevailed and redemptory methods for the contentious members were adopted to the great advantage of the church and the body. In the case of the church, discipline and rectification instead of excision and abandonment of the members; and in the case of the healers conservative treatment of parts instead of amputations and excisions; and in contagious disease seclusion and care instead of banishment as unclean and unworthy of societary sympathy and help.

It was said that "the healers followed the lead of the priests"; to be accurate it is needful to bear in mind that the medicine man (healer) and the priest were combined in the individual who first exercised these functions for the people. And that long ages elapsed before the rule of prophet, priest, and king holding sway as divinely endowed in one ruler merged into classified order in divinity, medicine, and law.

These grew out of the assumption of plenary endowment by the source of infallible power, of a specially favored class of teachers, to which beginners strenuously hold to this day, keeping up the fatuous jangle about "*authority!*" Seeming not to know that all authority resides in the individual consciousness! The culture and illumination of which marks the degree of knowledge attained.

Amputations without substitution other than miserable crutches held sway in practice for a long time; then crude attempts at artificial limbs came into vogue, which led to nearer approach in usefulness to the lost parts until commendable substitutes of lost eyes, ears, noses, arms and legs and teeth are attainable.

But these demand genius and skill of high order to produce. When teeth were troublesome the first thought and only resort was extirpation, until mutilations went so far as to suggest substitution. Early attempts at restoration consisted in blocks of wood, bone or ivory which were held in place by ligatures, wedges, pins or clasps of various device. At length metallic and plastic plates were resorted to, to retain the substitutes for teeth in place.

To name the varieties and time at which they came into use would make a book of no small size. Surgical manipulation was performed by barbers under advisement and direction of educated medical men, which separated the general practice of medicine into operative handicraft procedure and administration of drugs; thus inaugurating schism, disagreement and dispute amongst healers as to which branch should be recognized as to correct medical practice, or whether surgery (then in the hands of barbers) and general administration of remedies should be regarded as equal factors in the art of healing.

Desiring to know the what and the how of attainment of the knowledge pertaining to dentistry as a calling, let us now review the history of its rise and progress to its present status.

As already hinted individual practitioners personally instructed their pupils for a stipulated consideration.

In Boston this charge was so high as to preclude all who were not able to command the fee of $5000 adopted on the specious plea of keeping up a high standard of excellence in a few hands.

When the taking of "apprentices" (pupils) became more profitable to the teacher than office practice under this restrictive arrangement, Flagg and his immediate coadjutors were not permitted to make a monopoly of teaching, and others began to take pupils to whom they gave certificates of competency to practice dentistry upon the meeting of the demands of continual diminutions of time spent and fee required.

So that a very few years, not to say months, witnessed the sending out of "qualified" dentists in a few weeks for a fee of $500 instead of a year's time and $5000.

Through cupidity and personal friendship many were given certificates of qualification by spending a few days copying recipes, instruments and handicraft tricks in the secret back room which served as work shop and "college"(?) With these given as sacred trusts and the requirement of a solemn promise never to let any but the specially worthy see them or learn their magic power, some of the brightest geniuses of the future profession went forth to bless the world of mankind who were afflicted with defective or lost teeth!

Many of these adventurous spirits spread throughout the south and practiced for the dear people, and let it be said not *always* to their regret, for *some* accomplished such marvels of redemption and substitution of the teeth as to secure endorsement, encouragement and certificates of character and distinction for skill from divines, legislators, judges, lawyers, merchants, mechanics and others, with which they went forth from city to city and from plantation to plantation laying the foundation of fame, fortune and honorable retirement!

A portion of these missionaries with more sharpness than science took to other employments, among which gambling, then fashionable in that region, was most attractive and profitable to them in a cash sense.

This very soon so disgusted the really professionally inclined and endowed members of the fraternity, that the attempt was made to establish a dentist's department in the medical schools.

When this had failed a special charter for a school of dentistry, independent of university or medical college, was obtained, which led the way to the twenty-six schools of dentistry now confronting the pupils seeking qualification to practice the noble purpose of caring for the well being of the portal of the digestory tract so as to secure a sound body and a sound mind in it. In this instance as in so many others, "the wrath of man has been made to praise" GOOD for the race in building wiser than they knew.

Whatever the ambition may have been which put occupants into the chairs of the faculties of the various schools, that spirit of grace in the air about us hath wrought great good to the world through the practical teaching in the clinics held daily in them!

Does any one ask what clinical methods have accomplished?

We reply at once they have abolished polypharmacy from practice and inaugurated one remedy at a time for a given condition of disease, until adaptation of means to ends is made plain to every observer!

A notable example of this was had at the late meeting of the International Medical Congress at Washington, where the clinics of the Oral Section were the most attractive gatherings of the whole congress as testified day by day in the *Medical Advertiser*, and sent broadcast under its endorsement.

At this point the temptation to descend to the who and the why of all this glorious progress is so strong as to stand in the forefront and clamor for "recognition!" But let us remember that it was in pursuit of the what and the how that "got us there!"

Was it individual instruction by separate teachers that effected the work of progress? Was it the ambitious machinations of close corporationists, who said among themselves, "say to all comers, Let *us* manage you and *we* will make *you* great in the *profession*, for we are able by our vote to decide what is true and what is not true, and if you do what we wish you shall be successful if not ignored and hence a failure, for we have determined to set the standard."

Was it the work of inspired Lucifers from desert and plain, from the far off Nazareth without repute, other than for weakness and illiteracy that bore the burden of light that shineth inextinguishable at this blessed stage of our advancement?

Is it not rather attributable to irradiations from many obscure little torches touched and lighted by the radiance bearing Lucifers traversing the lands, of Erebus making darkness light before them and the rough places of science and practice smooth and easy to travel?

All! all! these have contributed to the much lauded status of each, notwithstanding the mutual boycotting, belittling and rejection of each other! What, then, is the distinguishing factor in this wonderfully rapid progress?

Beyond all dispute it is the habit of pooling our strength in showing each other our best methods in clinics wherever opportunity offers, in private office, society or congress of our fellows which bears the palm of most palpable growth!

The First District Society of New York was the first to light its torch at the altar of clinical instruction; and though sore-pressed for a time by opposition now joyously stands with lips touched anew by ever intensifying zeal and stands as the example of greatest freedom, cordially inviting all comers to partake of the open repast provided by the management at the regular afternoon clinics and evening meetings during nine months of the year, besides extraordinary and called meetings.

And now my noble fellow laborers in the fields of our choice what shall the harvest be but that which hath been ever gathering the rich sheaves into the garner until it overflows with rare treasure to redeem, enlarge and bless the people, without let, hindrance or rebuke of our own conscience or that of our fellows, until there shall be no darkness at all—in all the holy mount on which the children of LIGHT may meet freely in mutual admiration—a vertible heaven on earth!

QUERIES ANSWERED.

BY DR. L. P. HASKELL.

THE following is from an Ohio dentist:

DEAR DOCTOR HASKELL:—Your article on "Mineral Teeth" in the January number of the OHIO JOURNAL, leads me to ask a few questions. First, What kind of *pink rubber* do you use in your practice for forming *gums?* How do you flask and finish, and how do you manage to preserve or restore the color of the pink gums? Please give me in detail your *modus operandi* throughout the building of an artificial denture on rubber. We fully appreciate your well written ideas in regard to the difficulties in obtaining suitable shades and shapes. Still we cannot quite understand how you satisfy your patients' demand for a good "gum color" in the use of *pink rubber.* How do you do it?

There is no pink rubber nor can there be which resembles a porcelain gum, for the reason that the substance is opaque; there must be some degree of translucency, and it must be over a yellow ground.

There are few cases where the gum shows to any extent, and in those nothing will answer but the continuous gum process, for the reason that in most of them, the gum shows so much and requires to be so thin that the gum-sections are simply an abomination. With the other process a very thin and very high gum, and without seams can be made to look perfectly natural and yet be strong, far stronger than gum sections, backed by a thin film of rubber or perhaps no plate at all. In fact plain teeth set against the natural gum, without plate above, is preferable to the sections in such case, although it makes a weak plate and not a firm one.

There is really not much choice in the pink rubbers. I have been using Poulson's for several years. The Ash Co. now makes a pink rubber that is as strong as any other color, and can be used for the entire plate. They also make a pink without any vermillion in it, which looks very well. It is called "N. V."

Of course the bleaching of these rubbers improves their appearance, but this color cannot be retained as use and brushing soon destroy its appearance.

My patients make no complaint. Upon arranging the teeth I always show them to the patient, remarking that the wax will be replaced by an artificial gum, not saying what kind. Rarely, when the work is finished and adjusted in the mouth do they refer to it; when they do, it is usually with the remark, "Do you consider that a natural-looking gum? I say no, but it is better to sacrifice something in the color of the gum, than so much in other directions, as the general arrangement of the teeth—the articulation—and especially in the contour of the lips, the almost universal fault with full dentures, and which cannot be avoided with gum sections. I have never had to replace the rubber gum and plain teeth with gum sections.

METHODS.—Wax up with care, always carrying the plate higher and fuller over the cuspids than elsewhere.

Invest so the plaster comes to the edge of the wax and not to the teeth, which involves packing in both flasks. In filling the second half of the flask, press some plaster, with a knife, upon the surfaces and into the interstices of the teeth.

Place the flask into a pan of *cold* water over the heater, and as soon as it *begins* to boil remove and open, and the wax will be found in a condition to remove easily. What remains dash out with boiling water.

Cover the surface of the model with tin foil, rubbing it hard with a cloth or tissue paper; rub soap over the surface of the tin so it will not adhere to the rubber when finished.

Warm the rubber upon a tin or zinc plate over boiling water, packing small pieces around the necks of the teeth and laying strips the width of the gums in proper position, one thickness of pink being sufficient, and finishing with the other.

It is not sufficient to cut the "gates"; there will be some rubber pass between the molds which cannot escape and will prevent the flasks closing easily; to prevent this, remove a little from the entire surface of the plaster when the surfaces meet.

Don't use bolts; bring the flasks together with a press, in boiling water; be sure you have enough rubber; place in a "spring clamp" and vulcanize. Do not vulcanize higher than 300—280 is better, at whatever time your uncertain thermometer will do it; having first tested it; it will be in the neighborhood of two hours. A steam gauge is more reliable than these cheap thermometers.

In finishing, use first the file wherever it will reach; trim around the necks of the teeth with a thin sharp chisel-shaped tool; if the teeth are set apart sufficiently, pass the saw between them and lower than the pins, so as to avoid having the rubber gum show too low. This in fact is a serious objection to the gum sections, the gum is too near the ends of the teeth to look natural. The inside of these cuts finish out smoothly with small sharp instruments as also elsewhere between the teeth.

Use a large cone bur in the lathe for the entire lingual surface; follow with a round convex-shaped scraper; sand-paper the entire surface. Polish with pumice on a felt cone, following with small, soft brushes, and finish with dry plaster rubbed on with the finger.

DENTAL IRRITATION.—RELATING ESPECIALLY TO DISORDERS OF VISION.

BY E. H. RAFFENSPERGER, D.D.S., MARION, OHIO.

Ever since I heard the able paper, read by Prof. Wright, at the last meeting of the Ohio Dental Society, at Springfield, on the subject of "Reflex-(ions)," in which he accuses the occulist of "trespassing upon our especial field," I have given the thought some study and attention, and come to the conclusion, that although the accusation is merited, the occulist could hardly do otherwise and be successful in many cases if he did *not* trespass on the field that justly belongs to the dentist. But in such cases I agree with Prof. Wright that the dentist is, at least, entitled to *some* of the glory, as well as the profit, instead of being made the "cat's paw." And while it is true that we are yet "in the dark," on the subject of reflex action, there are many disorders affecting the vision that can be traced *directly* to the dental organs, due to irritation of the dental branches of the fifth nerve. There are numerous instances on record of persons who were blind, recovering their sight in the extraction of certain diseased teeth. Stellwagen says, "That amaurosis sometimes results from traumatic periostitis of the orbit, from ozæna, from abscesses of the antrum, with subsequent caries of the orbit, as is often caused by diseased teeth." Wells, the gynecologist, is authority for the following: "Amblyopia is sometimes due to reflex irritation, originating in one of the branches of the fifth nerve, or in other parts of the nervous system. Thus, severe and prolonged dental neuralgia may produce impairment of vision, which mostly disappears with the removal of the carious teeth." Other writers express the same views.

P. D. Keyser, M.D., of Philadelphia, reports the following interesting cases, which prove beyond a doubt that at least some of the affections of the eyes often arise from imperfect dental organs.

"Case 1. Mary H., aged 18 years, sight had gradually failed the past week, so that she was unable to sew or read. The patient was a fine healthy looking girl. The vision in her right eye had declined to Snellen xx at ten inches, and the left eye to six inches. Examination with the ophthalmoscope did not give any clue to the cause, as the fundus was normal, nor could any defect of refraction be detected. After a few days' treatment, without any improvement, I examined her teeth and found the second bicuspid and first molar of the left side much decayed, and on inquiry she said that she had been almost crazy with the toothache, off and on, for the past four weeks. I advised the extraction of the teeth, which was done the following day; and she returned to me three days after with the report that she could sew again. Her sight became better soon after the teeth were removed."

"Case 2. Geo. W., aged 30 years, came to see me with the complaint that a month previous his sight had became suddenly dim, and had remained so ever since. Jaeger's test types No. 17 could be read at seven inches only. Ophthalmoscopic examination gave a negative result. Had not used tobacco or liquor to any great extent. Had always been in good health. After a week's treatment in the generally prescribed methods, without benefits, I examined his teeth and found caries of four with exposed pulps, from which he had suffered a long time with toothache. He desiring to not lose the teeth, I recommended that the nerves be destroyed and the cavities properly filled, (with the hope of receiving the same benefit as in former cases when the teeth were extracted). The result was very satisfactory. The sight returned to its normal standard after the teeth were properly attended to."

"Case 3. Mrs. M. F., aged 61 years, came to my clinic complaining of loss of vision in both eyes, with floating moats in the right eye the past few days. She could not see to sew or read even with glasses. She supposed it to be dyspepsia from improperly masticated food, as she was obliged to remove her false teeth on account of the great pain and soreness in two teeth, one on either side, to which the false teeth had been fastened for years by clasps. She reported that she had been suffering from toothache for some time, more particularly when she put in her artificial teeth. Ophthalmoscopic examination gave a perfect negative result, with the exception of a couple of small, floating particles in the vitreous portion of the right eye. After nearly a month's treatment for dyspepsia, etc., (without beneficial results,) I examined the teeth remaining in the upper jaw, and found that the clasps had worn through the enamel and dentine, so that the pulps were exposed. On my recommendation she had the teeth extracted and a new upper set made, after which the sight returned with a presbyopia of $\frac{1}{16}$.

"Case 4. In March, 1876, Dr. Robertson, of Meadville, Pa., communicated the following case to me: Mrs. R., aged 32 years, had been almost blind for a long time in the right eye. She could see passing shadows only. She had been a perfect martyr to facial and dental neuralgia for a somewhat longer time, and concluded one night to have some teeth removed, and sent for a dentist who came late at night, and finding the first molar of the right side carious, removed it. She immediately went to bed, and to her surprise, on arising the next morning the vision of the supposed lost eye had returned. In a few days it became almost as perfect as in the other, there being a little difference in the focal distance only. She had noticed during the time of the blindness, that if she bit on anything with the tooth it caused sparks of fire to come in the eye just as if it had been struck."

The above cases all show that a relation exists between the eye and the teeth, but just *why* or *how* a diseased tooth affects the eye, or vision rather, is not stated, nor have I ever seen it explained further, than it was simply "reflex action" or reflex irritation, but as I was anxious to know the "whys and wherefores," I was compelled to form my own theory, why a diseased tooth should affect the eyesight.

If we will study a chart illustrating the fifth nerve, we will see that the fifth, or tri-facial nerve has three branches, given off from the Casserian ganglion. The first of these branches is the opthalmic. "This is a sensory nerve, and supplies the eye-ball, lachrymal gland, the mucous lining of the eye and nose," and the muscles and integument of the forehead. It has three branches, the lachrymal, frontal, and nasal. The last of these, I believe, to be the medium through which dental irritation is conveyed directly to the eye.

This nerve enters the orbit and passes obliquely across the optic nerve. It has three branches, the ganglionic, the ciliary, and the infratrocular. The first of these passes forward on the outer side of the optic nerve. The second, or as called, the long ciliary nerves, are given off from the nasal as it crosses the optic nerve. They join the short ciliary nerves from the ciliary ganglion, pierce the "posterior part of the sclerotic, and running forwards between it and the choroid, are distributed to the ciliary muscle and iris."

Now here we have two extreme ends of the fifth nerve. The ends of two branches, the superior and inferior maxillary, largely terminating in the teeth, and the terminal ends of the nasal, a branch of the opthalmic being found distributed in and over the eye, and also *passing over* the optic nerve. If the law of irritation is correct, namely, that irritation produces inflammation, and the law of reflex irritation is pretty generally accepted as true, I think we have the key to the puzzle.

With a tooth in an abnormal condition—the pulp exposed—mechanical violence produces irritation. This irritation is reflected along the track of the *nerve* to the nerve centre, here it is reflected again, and instead of returning by the same track, it shoots off and follows another branch of the same nerve, and finally terminates in the orbit, or eye. (Of course the sensation is felt "all over the face," as we have heard our patients say, but I am taking merely that part which affects the eye.) And here in these terminal branches this reflected irritation produces a certain amount of inflammation, and a larger flow of blood to the nerves is the result. The nerves, or rather their sheaths, become enlarged and full, owing to the fullness of their vessels, and *passing over* the optic nerve, and lying along side of it as they do, they naturally press upon it and interfere, more or less, with its functions; also the terminal branches being distributed in the eye. As the result we have a derangement of vision which lasts until the cause of irritation is removed.

AMERICAN DENTAL ASSOCIATION.

HELD AT NIAGARA FALLS, AUGUST 2, 3, AND 4TH, 1887.

[Reported expressly for the OHIO JOURNAL OF DENTAL SCIENCE.]

(*Continued from page* 576, *December*, 1887.)

THE ERUPTION AND REMOVAL OF THE DECIDUOUS TEETH.

DR. C. N. PEIRCE read a paper upon this subject. He spoke of the evolution of human dentition as having been from a simple to a more complex type, both as regards structure and form, in common with the dentition of other mammals. In considering the origin and peculiarities of mammalian teeth and what constitutes a primitive dentition, it is necessary to go back to the lower forms of animal life, and note the change. He took the Batrachia and Reptilia as examples of mammalian ancestry, and stated that the teeth of these were considered a primitive type. They consist of bone-shaped anchylosed crowns, large, frequent, and succession almost endless. In certain forms of Reptilia there seems to be a marked progress, the teeth being implanted in distinct sockets. Progression seems to extend through these forms—the Rodentia, Carnivora, and Herbivora—to man. He spoke of the relationship of the deciduous to the permanent set of teeth, stating that Dr. Wortman asks, "are the deciduous teeth superadded embryonic structures, or to be homologized with the first set of teeth of the lower vertebrates?" He thought the rudimentary condition of the teeth in some mammals, was evidence of transitional character; and if true that tissues most recently developed are frequently the first to be atrophied, it would seem that these were superadded structures. Yet, the enamel organs of these deciduous teeth arise from certain portions of the membrane of the oral cavity, and in their stage of development the enamel organs of the permanent successors, arise from the necks of the enamel organs of the deciduous teeth, as those of the temporary arise from the epithelium. The germs of the first permanent molars stand physiologically in the same position as the deciduous teeth, and the germs of the second permanent molars arise from those of the first, and the third from the second, as the germs of the anterior teeth arise from the enamel organs of their predecessors. Dr. Wortman says: "There is one thing upon which I would strongly insist, and that is, that the first true molar in the human dentition is a persistent milk molar." He further described the process of formation and eruption of the deciduous teeth, and of the force by which teeth were propelled toward and through the mucous surface into position. He stated that premature eruptions of teeth were usually found in children suffering from improper nutrition, or other abnormal systemic conditions, and are independent of the force resulting from normal growth. In regard to impacted teeth that have been restricted, or entirely obstructed, when the root completes its development under these unfavorable conditions it is usually stunted, or curved in the direction where the surrounding tissues yield most readily, and hence posteriorly. He thought it evident that the eruption of the teeth is not a continuous process, but that they have periods of rest and growth which are modified, or intensified, by the conditions controlling the function of nutrition. In regard to root absorption, Chas. S. Tomes says: "The root at or near its end becomes excavated by shallow cup-like depressions, which deepen and coalesce until gradually the whole is eaten away. Although absorption usually commences on the side of the root nearest the successional tooth, it does not always do so; it may, and often is, attacked on the opposite side, and in many places at once." That the absorption of the temporary teeth is absolutely independent of pressure, seems to be Mr. Tomes' conviction, and in this the writer fully concurs, although taking exception to the statement that successful absorption may begin only at the apical end of the root, and go on to completion.

The absorptive process, though a physiological one, is somewhat obscure. The evidence of its being a physiological action is that it matters not from how many centers it has commenced, to be successful it must, in its early stages, involve the root canal and pulp; the latter retaining vitality, however, until the completion of the process, as the moment vitality of the pulp ceases this retrograde metamorphosis, or physiological absorption, terminates. What induces this molecular dissolution it is difficult to say; but the conditions always present and essential are, the place of commencement of absorption, retention of pulp vitality, and the presence of a vascular papilla, close to the absorbing surface, and rich in giant-cells, or osteoclasts. The absence of any one of these would certainly militate against the completion of the process. The statement that the presence and pressure of the permanent tooth are essential cannot be sustained: for frequently the deciduous tooth is decalcified in the absence of its successor. Sometimes we find the permanent tooth impacted against the bifurcated roots of the deciduous molar, or pressing down by the side of a single-rooted tooth, and both be more or less displaced by the persistent unabsorbed deciduous roots. The nourishment previously appropriated by these teeth having been appropriated by their successors, probably plays an important part in the process of absorption. The absorption of bone is undoubtedly from similar physiological efforts. This process of absorption should not be confounded with that from an abnormal state of the tissues, which usually results in suppuration, and caused principally from injuries, such as partial dislodgement and replacement, malposition of the affected, or adjoining tooth, or a crowded arch. It is seldom possible for a tooth to be dislodged from its socket and replaced, or another tooth here inserted, without there being a persistent effort of nature to reduce it to its embryonal state the bordering line of one or both of which have been tissues disturbed. If the effort is properly sustained by good nutrition, the repair is almost complete; but from defective nutrition we get a deficiency of reparative tissue. The failures of root absorption in all cases of teeth inserted or reinserted with which the writer has been familiar, could be traced to either defective manipulation, or systemic peculiarities.

DISCUSSION.

Dr. Hunt: The writer is in doubt whether eruption is the best term that we can have. I think *emerged* is better.

Dr. Brophy: It seems as though this is a good opportunity for the committee on nomenclature to take the matter in hand, and give us a better term for eruption; and hope they will do so by another year.

Dr. Abbott: It is difficult to say what impels the tooth into the mouth. I use the term "projection" of the tooth forward into its position, for I think but for the growth of the root at its end, there would be no forward movement of the tooth; and if this growth is checked, the tooth remains in just the same position it was at that time. We find tumors in the mouth, caused by the stoppage of the growth of the roots of teeth, before they attained the perfect form nature intended. The process of absorption is a vexed question, yet I cannot believe with Tomes and others, that there is some special process by which the osteoclasts do the work by eating away, and destroying the deciduous roots. Tomes also adds that "absorption cannot be in consequence of the coming of the permanent tooth, for absorption of the root may begin in some other place than that nearest this tooth." This may be true but I question it. Cases are exceptional where it occurs. Irritation may be produced by some means, and cause absorption upon one side only of a root. This I term a physiological inflammation, and as a rule, due to the near approach of the crown of the permanent tooth to the root of the temporary.

Dr. Hunt: In the use of the term *project*, how would you avoid confusion with the term as used in cases of abnormality or irregularity?

Dr. Abbott: That would be *protrusion*.

Dr. Horton: Within the last year I have had several cases where the temporary teeth were retained, with no signs of the permanent teeth erupting. One case was that of a patient about thirty. The two superior temporary cuspids were retained. Other cases were in a family where three of the daughters, aged from seventeen to twenty-three, retained the four superior temporary molars, and at that time there was no sign of the permanent teeth erupting. I believe with Dr. Abbott that the presence of the germs of the permanent teeth, and their growth, is necessary to produce absorption in the roots of the temporary teeth. In cases of retarded eruption I have almost invariably found the teeth to be malposed, or crowded by other teeth. In one case, that of a lady, about fifty, a superior cuspid made its appearance after an upper plate had been worn three years. The tooth was in a horizontal position but of full size, and perfect shape. Had the germ been in the proper position the tooth would undoubtedly have erupted at the proper time and place.

Dr. Abbott: The writer says that absorption will only be complete when it begins at the end of the root. This depends upon whether the permanent tooth approaches it from above, or from the side.

Dr. Peirce: I stated that if the absorption commenced at the sides, I did not think we would get complete absorption of the root.

Dr. How thought that *erupt*, and *project*, are not suitable terms, but suggested *advance* as one covering the entire process.

Dr. Darby: I do not think these are good terms. How would it sound to say that a child has advanced, or has projected, his teeth? *Emerged* is a better term.

Dr. Knapp thought the writer in error regarding the absorption of the deciduous roots. There have been many cases in which the permanent tooth has approached the deciduous root on the proximal side, and the absorption carried on so complete that a mere shell, at the opposite side, was left.

Dr. Atkinson: Very few teeth begin to absorb at the end of their roots. It is not certain that a close proximity of a permanent tooth is the immediate antecedent to absorption. The first step in absorption is the retrogression of the connective tissues, and that never occurs at the apex or immediately in relation with pulp structure, but by the melting of the lime salts and their return to the embryonal condition of the carneous body, which is but a remnant of the orginal pulp that was the source of supply in the beginning. My opinion is that roots of adult teeth are absorbed by the same method as those of the temporary teeth. He has seen beautiful fillings in roots where the gold remained up to the foramen, and the territory to the undissolved portion, was filled with embryonal structures like a carneous body.

Dr. Guilford: In regard to the original character of the teeth, or rather their original position or typal form, Tomes says the typal form is a cone, while Wedl claims to be a wedge. We have the incisor or cutting tooth, the cuspid or lacerating tooth, and the bicuspids and molars as grinders. Some writers think there should be a gradual blending of one form into another, and in that case there must have been a tooth intermediate in form between the lateral and cuspid in the pre-historic man. Some believe there must also have been a tri-cuspid tooth between the second bicuspid and first molar, but whether future discoveries will disclose these theories we cannot say. Dr. Peirce believes what we call the first permanent molar, to be a persistent deciduous molar. One reason for this belief seems to be the close resemblance between the first permanent molar, which has four cusps, and second deciduous molar, having the same number. The second permanent molar having, it is claimed, but three, resembling the third molar. Now, while the second molar is sometimes found with but three cusps, it nearly always has four although the fourth may not be as fully developed as on the first molar. There seems to be more ground for the belief in the lower jaw, as the second deciduous and first permanent molars, have each five cusps, while the second permanent molar has four. But how do they get this harmony when, upon examination they find the third lower molar usually with five cusps?

While the eruption of the first permanent molar is but a short time after the completion of the temporary teeth, the interval is greater than between any two successive teeth of the permanent set. The third molar being excluded in either case. And more than this, the time between the eruption of the second deciduous and first permanent molars, is about half the length of time required for the eruption of all the permanent teeth excepting the third molars. We see no reason to change the belief that the sixth year molar belongs to the permanent set.

Dr. Peirce said the gentleman was mistaken about his having said he believed that the sixth year molar was a persistent deciduous tooth. But that he said Dr. Wortman believed this, and it led him to the belief himself, although he was not yet fully convinced as to the truth of the statement. Dr. Guilford says that the first permanent molar always has four cusps, and that the second molar is so like it that they cannot be distinguished. This I object to; for the second molar, with few exceptions, is recognized as a tri-cuspid molar.

SPONGE-GRAFTING.

Dr. W. H. Atkinson presented a paper upon this subject of which a partial synopsis follows: The sponge-graft is primarily adapted to the restoration of tissue traumatically removed, in which there has been no deterioration other than mechanical. Secondarily, it is the best means of rapid reproduction of lost tissue from the inflammatory process. In a case of this kind the chasm of the wound must be enlarged beyond the red line. If the flaps of living tissue are large enough to cover in the cavity, we get a union by first intention. Where there is not enough normal flesh to cover in the sponge, make a substitute from sterilized gauze, or oiled silk. This covering affords the pabulum a nest in which to form the clot from which protoplasmic embryonal corpuscles and tissues are elaborated to form the union. All cases that I have seen treated in this manner have healed by first intention without formation of a drop of pus. He here cited cases that he had successfully cured by means of this graft. He further stated that in good cases these dressings could be removed in from four to eight days and the patient dismissed. Antiseptic precautions should be continued throughout the treatment. To sterilize the sponge, place it in water to which one grain of bichloride of mercury has been added, and heat it slowly to 130°–164° F., but no higher, for fifteen minutes. Wring out all the watery solution before inserting the sponge that the exudate that forms the clot may not be diluted. Spray the affection three times a day with a bichloride solution, as above described, or a solution of one grain of potassic-mercuric-iodide, to six ounces of water.

SOUTHERN DENTAL ASSOCIATION.

NINETEENTH ANNUAL SESSION, 1887.

[Reported expressly for the OHIO JOURNAL OF DENTAL SCIENCE, by "Mrs. M. W. J."]

(*Continued from page* 580, *December*, 1887.)

THURSDAY—NIGHT SESSION.

The Association came to order in scientific session at 9 P. M., when DR. E. R. BEADLES, Danville, Va., read a paper entitled

DENTISTRY—THE OLD AND THE NEW.

He said that the iron gray-headed man who "turned dentist" a quarter of a century ago could never have pictured to his mind such a meeting as the present which marks a glorious epoch in our history. Dentistry was then a trade. The importance and value of the teeth to the health had not then been thought of. We live by eating, and the transformation of food material into blood depends upon mastication. Men honor the means which effect a cure more than the means which prevent disease. Thousands of men owe their good digestion to the dental surgeon, but not more than one of a thousand thinks of him gratefully for that reason. In old times an aching molar was cast aside as an offending member; now it is treated more kindly. No science has done more for humanity than the one we seek to upbuild. Then it was lowly and degraded, now it is honored and noble. The same motive which moved a Columbus or a Newton, moves us; the love of science for science's sake. He then portrayed the contrast between the difficulties in the way of gaining information in the earlier days of the profession, and the facilities afforded by the colleges of to-day, etc. He said that the thing most needed just now was a reliable local anæsthetic for the painless extraction of teeth when the latter operation was inevitable, though it should be avoided as far as possible, the great duty of dentists being to *save teeth*. We should condemn a bad practice, not because it is old, but because it is bad, and accept the new, not because new, but because good, if good.

Dr. Winckler than continued the discussion of operative dentistry, and the question of what constitutes soft foil. He said that he had not found the fumes of ammonia efficient in improving "sticky gold," wishing to destroy its cohesion he had succeeded only with the fumes of sulphur. Dr. Hope, of Georgia, had informed him that a minute portion of silver was added to the gold to make it non-cohesive.

Dr. Morgan, (Nashville,) said that in his experience the fumes of ammonia would do it. As to the question of silver, coin-gold, which contains a large per cent. of silver, can be made cohesive.

Dr. J. J. R. Patrick, (Belleville, Ill.,) said that pure gold would be rendered non-cohesive by the interposition of any substance whether ammonia, dust, moisture, or grease.

Dr. Storey, (Dallas, Texas,) said when his gold wonld not stick he passed it through tincture of iodine and then the flame, and it would stick like North Carolina resin.

Dr. R. Finly Hunt, (Washington,) said that he arose in the interests of science and nomenclature. The only terms proper to apply were cohesive and non-cohesive. Soft and hard were not the correct terms. There was also a distinction between cohesive and adhesive, the latter being used often incorrectly and where the former was intended. He hoped the Association would refuse to sanction the use of the term soft gold. He said that the paper of Dr. Beadles was an able paper for a young man, and he hoped we would act up to the science of dentistry as he had portrayed it.

Dr. Morgan said he had given up trying to fight out that question fifteen years ago. He thought Dr. Beadles had portrayed our present status in rather strong terms. Papers published in 1850 would show that in many points we had made but little advance. The principles were the same though practice had been somewhat modified.

On motion of Dr. Beach, (Clarksville, Tenn.,) the subject of operative dentistry was passed.

A paper from Dr. Hilzine on

MECHANICAL DENTISTRY

was read by title, subject to call.

Dr. W. D. Dunlap, (Selma, Ala.,) read a paper entitled

DENTAL HYGIENE—A STUDY THAT BELONGS TO THE PEOPLE.

He said that the study of dental hygiene was at once a most important and a most neglected study. The most important because on the principles involved in its teachings depends the preservation of the teeth in their normal condition. The most neglected because the needed information is confined to the dental profession. The people, old and young, who are vitally interested in dental hygiene should understand its principles and follow them. As a corps of operators we try to *save* teeth, and follow every rule, and adopt every device to this end, but we have still a higher duty. The masses are very ignorant on this subject. They don't go to the dentist until they are in actual pain. They need specific instruction. Books should be prepared to be used in schools, both public and private, containing plain, practical hygienic rules, well formulated on correct general and special hygiene.

Teachers who look for clean face and hands, and hair neatly brushed, should also insist on clean teeth. If such training is begun early in life, habits will be formed which will be maintained in later years. The middle-aged and the old won't learn these things or form new habits, but children are easily trained. This would do more good than all the drills and burs and scrapers and pluggers. If properly instructed, our operations will be called for at an earlier stage, and better results will follow than when delayed. Our best results are with those whom we have cared for since they were children. We should call in the aid of the mothers, and such works as the letters of "Mrs. M. W. J." We should also obtain admission into the schools with a set of rules, and see that they are taught properly. We should enlist the aid of legislators and school boards, and make it compulsory. It is our duty to go out into the field and teach the importance of the little mill that grinds the material to build up the tissues of the body. Teach the people that cleanliness is necessary; that slow mastication is important; that the teeth should be repaired promptly; that the mill should be self-cleansing. It is true that man was not born with a tooth brush in his mouth, but as we now live and eat, those who clean them least have the greatest pathological troubles.

Dr. R. Finly Hunt said that this subject was one of the most important. The paper was good and true as far as it goes, but it is not far-reaching enough. Dental hygiene cannot be limited as a single point, as in the emphasis laid on cleanliness by Dr. Dunlap, or the proper preparation of the cereals as advocated by Dr. John Allen, or in the furnishing of lime-salts as taught by our esteemed and lamented brother from New Orleans, the late Dr. J. R. Walker. You may keep them as clean as you can; you may offer them all the necessary ingredients to repair the waste of lime-salts, if the system is not in condition to assimilate and distribute this material it will all be in vain. Until you have the whole system in perfect order, you cannot hope to have perfect teeth. I have seen children whose teeth had the most perfect care from the age of two and three years, with perfect cleansing, proper food, but in spite of every effort they decayed; the machine was not in proper condition and the food was not assimilated. The food stuff is not of so much importance as its assimilation.

Prof. Winder's examination of the skulls of the North Western Indians, of the Esquimaux, of the Sandwich Islanders, and other primitive races shows well-developed arches and good teeth in all alike, though their food habits were widely different. The Indians used a mixed food, game and cereals; the food of the Esquimaux was largely carbonaceous—blubber and fish oil; the Sandwich Islanders use vegetable produce, yet from these different varieties of food each assimilated that which was necessary to make good teeth. Dental hygiene cannot be confined to the mouth alone for food has to pass through the whole system and be acted upon by various organs and secretions before it is prepared for assimilation.

Dr. Beadles asked Dr. Hunt if he did not consider the care of the mother during gestation an important point?

Dr. Hunt replied that if the physique of the modern mother could be kept in as normal condition as that of the Indian or the Esquimau mother the same result would be evidenced in the teeth of the children. No special prescriptions will be required if the system is kept in proper condition. If mothers would eat only proper food, eat only when they were hungry, and stop when they had enough, take plenty of exercise in the open air and sunlight, their systems would be kept in condition to so assimilate their food as to produce well-developed arches and fine teeth.

Dr. Morrison, (St. Louis,) said that much devolves on the dentist of the future in this line. We turn over to our patients our most beautiful work, and when we see it again it is in similar condition to the property of the U. S. next door, (Fortress Monroe,) tumbling into ruins for lack of proper care. We should instruct our patients how to care for their teeth. He could not agree with Dr. Hunt that care and cleanliness would not save the teeth. He believed that if a child was trained from infancy in the care of the teeth, and the deciduous teeth kept in proper condition, that the second teeth would be all right.

NINTH INTERNATIONAL MEDICAL CONGRESS.

HELD AT WASHINGTON, D. C., SEPT. 5, 6, 7, 8, 9, AND 10TH, 1887.

[From advance slips supplied by *The Medical Record*, of New York, from its special report.]

(*Continued from page* 584, *December*, 1887.)

Afternoon Session.

The Section was honored by a visit from the President of the Congress, Dr. N. S. Davis. In introducing him President J. Taft recounted the efforts that had been put forth by Dr. Davis to secure recognition to the Dental Section. To him more than to any other man in the medical profession is due the credit for having removed the obstructions in the way of the dental specialty.

Dr. Davis replied: Twenty-two years ago I had the pleasure of entertaining the members of the American Dental Association, then assembled at Chicago, at my house. On that occasion I expressed the hope that some day, in the near future, we might meet on equal grounds. My hopes of that day are realized today. At the last meeting of the American Medical Association, when the question was brought up to admit dentists holding their degree from a recognized institution, it met with no opposition. The action of that body has forever removed the obstacle which had been in your way, and you are now on an equal footing with your medical brethren. He congratulated the members for the interest they took in the advancement of the healing art, and closed by warning them not to fall into "schools," but to meet every one on the broad field of science.

Dr. E. S. Talbot, of Chicago, Ill., read a paper on

ETIOLOGY OF IRREGULARITIES OF THE JAWS AND TEETH.

This paper was very exhaustive and thoroughly well prepared. The writer showed throughout an intimate acquaintance with the subject, and the Section was not lacking in appreciation of his efforts.

The paper was discussed by Dr. W. C. Barrett, of Buffalo, N. Y.

A paper by Dr. J. J. R. Patrick, Belleville, Ill., on "Irregularities," was read by title; also one by Dr. E. H. Angle, Minneapolis, Minn., entitled "Notes on Orthodontia, with a New System of Regulation and Retention"; also by Dr. L. C. Ingersoll, Keokuk, Ia., on "Inflammation of the Oral Tissues."

Fifth Day—Morning Session.

CLINICS.

A very interesting clinic was given by Dr. A. R. Starr, of New York, in capping the exposed pulp of a tooth.

It is only of late years that any progress has been made in so treating and protecting an exposed tooth pulp as to preserve its vitality. The operation caused the patient very little pain, and all those who have had the opportunity to see it agreed that it was a success.

Dr. William J. Younger, of San Francisco, implanted a tooth. Great diversity of opinion was expressed as to the ultimate result of this method of thus supplying the lost teeth.

Dr. R. B. Adair, of Gainesville, Ga., completed the treatment of a case of pyorrhœa alveolaris.

Thirty-two other gentlemen gave clinics on filling teeth and constructing artificial dentures.

Prof. F. Busch, of Berlin, Germany, read a paper on

THE COMPARATIVE PATHOLOGY OF THE TEETH, WITH SPECIAL REFERENCE TO THE TUSK OF THE ELEPHANT.

A number of specimens were shown by the doctor to illustrate his paper. At the close of his paper the doctor exhibited an instrument for removing the small birth-marks so often found on the face. The instruments have a circular cutting edge ranging in size from one-fourth to half an inch in diameter, and fit into the dental engine. The mode of operation consists in selecting a knife the size of the mark to be removed, and placing it upon it, quickly revolving it. It will take only a moment to accomplish this, and is said to be almost painless. The only dressing the doctor applies is dry cotton, which he leaves in position for from six to eight days, at the end of which time the part is perfectly healed.

Discussion of the paper was taken part in by Drs. Wm. H. Atkinson, of New York, and W. C. Barrett, of Buffalo, N. Y.

Dr. E. Andrieu, Paris, France, read a paper on

THE SIXTH YEAR MOLAR.

The essayist held that the sixth year molar being in development, eruption, and structure an organ of transmission from the temporary to the permanent set, it should be extracted when the permanent teeth are in position. More room is gained by this procedure, and a longer period of usefulness insured to those remaining.

Dr. L. D. Sheperd, of Boston, Mass. The doctor expressed his regret that such sentiments should still be prevailing among the profession. He cited cases from practice, when the extraction of these teeth caused not alone loss of valuable masticating surface, but actual irregularity of the ones remaining.

Dr. Paul Dubois, of Paris, France, stated that he wished the Section to note that the ideas expressed in the paper were not carried out by the dentists in France.

Professor Frank Abbott, of New York, could see no difference in structure between the sixth year molar and the other permanent teeth under the microscope, but a very marked difference was apparent between that and the temporary teeth.

A paper by Dr. Th. David, of Paris, France, on "Aphthous Stomatitis," was read by title.

Dr. J. S. Marshall, of Chicago, Ill., read a paper on

OPERATION FOR THE CURE OF A PERSISTENT NEURALGIA OF BOTH TEMPORO-MAXILLARY ARTICULATIONS, AND REFLECTED PAIN IN THE RIGHT BRACHIAL PLEXUS.

History.—Patient, female, forty-two years of age, was operated on some eight years before for the removal of an osteosarcoma of the right inferior maxilla. Extensive suppuration followed, and the wound did not heal for several months. Considerable cicatricial tissue was formed, and the jaw displaced to a considerable extent. Neuralgia dated from the healing of the wound, and the conclusion arrived at was that the irregular position of the jaw was the cause. An operation for the relief of this condition was performed, and the neuralgia ceased. The doctor described the steps of the operation at great length, but failed to show that it differed from methods generally employed.

The following papers were read by title: "Articulation of Artificial Teeth," by Dr. H. L. Cruttenden, of Northfield, Minn.; "Power in Dentistry," by W. St. George Elliot, M.D., of London, England; "Porcelain Filling," by Dr. E. C. Moore, of Detroit, Mich.

Dr. Alton H. Thompson, of Topeka, Kan., read a paper entitled

DOES FUNCTION CONTROL THE EVOLUTION OF STRUCTURE?

Some time since, Dr. C. N. Peirce, discussed a subject similar to that at the head of this paper. After noticing the mechanical forces involved in and influencing the evolution of the teeth, he says: Those cumulative forces are utilized through heredity, and while so potent in tooth-evolution, exert a similar influence in the development and modification of all other structures and organs. All departments of biology recognize the fact that heredity, adaptation, and growth, being of special importance in the evolution of the organic body, must therefore be regarded as especially formative functions. Adaptation to environment might be called the ancestor of function, as function is of organization. Illustrations of modification of structure in response to function are very numerous, in which it is shown how an organ may be completely changed or a mere rudiment be fully developed by the demand for the performance of a function unknown before.

A century ago Lamarck laid down the following laws concerning the development of organic life, which we, with all our accumulated facts, can change but little. In his second law he said that, The production of a new organ in an animal body results from the supervention of a new want continuing to make itself felt, and a new movement which this want gives birth to and encourages. Third law: The development or organs and their force of action are constantly in ratio to the employment of those organs. Fourth law: All that has been acquired, laid down, or changed in the organization of the individual, in the course of this life, is commenced by generation and transmitted to new individuals which proceed from those which have undergone those changes. Altered wants lead to altered habits which result in the formation of new organs, as well as in modification and growth of those previously existing.

In our study of the subject, we will confine our observations to that field in which we, as dental and oral specialists, are most interested, the teeth.

Everything is made for a purpose, and the purpose must precede the thing made for effecting the purpose. Nature plans her work as deliberately as man plans his actions. The means for accomplishing an end are not the cause of execution, but the effect. The organ is the effect, and function is the cause of structure. As food-selection is the cause of the function, so the function of the acquisition and preparation of food is thus the cause of the masticating apparatus.

If function is the cause and support of structure, if an organ develops or atrophies as it is used or disused, if the impulse of active employment dictates the evolution of parts and tissues in succeeding generations, if organs have been suppressed through disuse or remain in various forms as mere rudiments—their function having passed away—then, indeed, must the teeth of man be tending toward final and inevitable suppression.

If in the future of physical education there shall be found a place for education in the accomplishment of masticating food, then, indeed, may the teeth be improved and developed by exercise, as the muscles and lungs are improved and developed.

Owing to the time for adjournment having arrived, no discussion was had on this paper.

The President congratulated the members on the interest they had shown throughout the session, and hoped great good might come from this Congress, both to the profession and their patients.

A vote of thanks was voted to President N. S. Davis for the exertion he put forth in behalf of the dental section.

Also a vote of thanks was offered to President J. Taft and the Executive Committee.

M. C. Gottschaldt, D.D.S., New York.

Compilations.

"Gather up the Fragments."

ON THE CAUSES OF SUBCUTANEOUS INFLAMMATION AND SUPPURATION.

Dr. Grawitz, in the *Charité Annalen*, says: The opinion held at the present time that the entrance of bacteria into the subcutaneous tissues, as the only exciting cause of suppuration, is not deserving of unqualified acceptance. It seems essential that the bacteria should form colonies and multiply in the tissues or upon wound surfaces before they are absorbed. When immediate absorption occurs they are harmlessly eliminated from the body.

What is the effect of irritating watery solutions?

(1). Concentrated salt and sugar solutions, either sterilized or containing staphylococcus aureus, injected into the tissues caused œdematous swelling, but no suppuration in dogs or rabbits. The addition of even considerable quantities of staphylococci was without effect. Suppuration resulted only when there was necrosis of the skin.

(2). The effect of acrid substances in watery solution.

I. *Group.*—Germ-destroying substances. Corrosive sublimate, 1 per cent.; nitrate of silver, 1 per cent.; absolute alcohol, chloride of zinc, 1 per cent.

(*a*). Corrosive sublimate in dogs and rabbits underwent simple absorption,—in most instances it was accompanied by transitory swelling, but there was no suppuration.

(*b*). Experiments were conducted with nitrate of silver, both in sterilized solutions, and in solutions containing pus-microbes. The addition of the latter was without influence, inasmuch as the germ-potency of the microbes was destroyed by the solution (5 per cent., and much weaker). Very weak solutions (0.5 per cent.) were simply absorbed. Stronger solutions (5 per cent.) produced abscesses in dogs. The pus collected under aseptic conditions was free from germs.

It seems evident that suppuration is a reaction of animal tissues, which may be induced by a chemical substance without the influence of bacteria—a substance which may in fact destroy germs—provided the reagent is of the requisite strength, and is introduced into the tissues in sufficient quantity.

(*c*). The injection of absolute alcohol containing pus-microbes, or followed immediately by the injection of water holding the microbes in suspension, did not cause suppuration.

(*d*). Chloride of zinc in 1 to 5 per cent. solution gave the same results.

II. *Group.*—Soluble acrid substances, not germ-destroying. Acids, potassium and sodium hydrate and ammonia.

(*a*). The injection of acids, either in strong or weak mixture, did not produce suppuration. The addition of staphylococci (aureus, citreus, albus) did not alter the result.

(*b*). The hydrates of potassium and sodium gave similar results. The lye swelled the tissues and destroyed them. It did not produce favorable conditions for the growth of microbes within the body.

(*c*). Ammonia solution-sterilized. When introduced in small quantities and in weak solution it was absorbed without producing inflammation. Larger quantities (4-6 c. cm.), and stronger solutions caused abscesses in dogs. Cultures of this pus upon agar agar remained sterile. Repetition of this experiment, with the addition of pus-microbes, gave the same result, except that in the latter colonies of micrococci appeared on the agar agar. "These experiments show conclusively that ammonia of sufficient strength causes violent inflammation and suppuration. It provides suitable conditions in the subcutaneous tissues for the development of the microbes of pus. In very weak solution it does not injure the tissues.

How does the absorption of irritating oily substances act?

(*a*). *Turpentine.*—Preliminary experiments showed that turpentine was an active germicide. Its effect upon the subcutaneous tissues varied in different animal species. Its introduction in rabbits and guinea pigs, with or without the addition of pus-microbes, was followed by inflammation, but no suppuration. In dogs, on the contrary, it proved to be an active pus-producing agent.

(*b*). *Croton Oil* is not a germicide. Experiments showed that it was capable of exciting inflammation. In small quantities it caused in rabbits a watery or fibrinous exudation into the tissues. In larger quantities it corrodes; has a toxic effect, and, under certain conditions, may cause suppuration. When pus-microbes are added, suppuration always follows.

How does the injection of pus-microbes act?

Pus-microbes, in themselves, are not capable of inducing suppuration in healthy tissues—dogs and rabbits.

Various chemical substances can, without the aid of bacteria, induce suppuration under favorable conditions. When used in proper quantity, and in proper concentration, and upon animals whose tissues will react, suppuration invariably follows. Certain chemical substances in proper strength fit the tissues for the growth of pus-microbes.

Grawitz and Bary conclude that the same importance is attached to the ptomaines of pus-microbes as has recently been demonstrated for those of numerous other bacteria. The ptomaines of pus-microbes, acting as chemical irritants, prepare a soil in the subcutaneous tissue upon which the microbes may grow. Their effect is very readily seen upon the introduction of sterilized cultures, in which the fungus-poison is the only active agent. Sterilized cultures of the yellow pus-microbe induced suppuration in dogs. The pus contained no germs. For the formation of ptomaines the presence of free oxygen is of the utmost importance.—*Medical Journal and Examiner.*

ASEPSIS VERSUS ANTISEPSIS.

It is difficult for surgeons and others who have been reared in an atmosphere heavily charged with antiseptics, to entertain the idea that antiseptics, whether in spray, powder, or solution, may be only a fashion, a whim, in fact, an ephemeral current of thought dependent upon, and somewhat analogous to, the bacillary theories which just now pervade and dominate scientific research. The history of medicine in the past is paved with these good intentions, and he would be a bold man who, with the mortal remains of past exploded systems before his eyes, would venture to deny that things may not be as they seem, and that our pet theories may, bye and bye, fade away into the gloom of oblivion, to be alluded to only as archælogical curiosities.

Probably, if indignation and surprise did not hush the voice of the would-be advocate on listening to such heterodox opinions, he would triumphantly point to the wonderful results which have followed the introduction of antiseptics in surgical practice—results which are as brilliant as they are real. Here, however, we must beware of confounding the *post hoc* with the *propter hoc*. The use of antiseptics, though the most salient feature of the modern departure, was by no means the only factor in the sucsuccess achieved. Just as the Asclepiades of ancient Greece, under pretext of cure by means of incantations and charms in which they doubtless believed to a great extent, in reality attained their object by apparently insignificant details of dietary and exercise, so the surgeon priests of our own day, while working on the imagination (their own included) with awe inspiring steam spray apparatus and complicated dressings, really brought into general use habits of scrupulous cleanliness; cleanliness of persons, of instruments, and of injuries. To this, therefore, too much neglected factor is to be attributed the lion's share of the excellent results thereby obtained, and even the portion of credit not directly due to cleanliness, has to be impartially divided between the drainage tube and the use of antiseptics. At the outset our surgeon priests were doubtless the dupes of their own imagination, but as years have gone by, they have gradually, without unnecessary *éclat*, dropped one by one the means which they had credited with the possession of such powers for good. Surgeons who were by nature opposed to doing what other people did, deliberately eschewed the use of antiseptics in any form. They inculcated and practiced cleanliness, but so far from employing the imposing array of gauze protective and bandages, they even left wounds without a dressing of any kind. Yet their results did not compare unfavorably with those of more orthodox operators, and their success has led to some reaction against the ornate methods of the so-called antiseptic surgery. The more one looks into the subject, the more is one disposed to question the value of antiseptics *per se.* Bacteria have been found to thrive in a two per cent. solution of carbolic acid—a stronger solution than could be kept in contact with a wounded or abraded surface, and more recently the gravest doubts have been expressed as to the value of that pet antiseptic, iodoform. Once its antiseptic qualities are impugned, its disagreeable odor will probably ensure its ostracism. Experience shows that, as a class, antiseptics, in doses which it is safe to employ, only retard putrefactive changes to a trifling extent. The periodical and painstaking removal of materials liable to undergo putrefactive changes is the only real protection against their taking place, and agents which only retard the process or merely disguise or remove the characteristic smell, are apt to prove both a delusion and a snare. When we turn from the employment of disinfectants and antiseptics in surgery to their domestic application, their utility, except for temporary and strictly defined conditions, becomes more questionable than ever. The sprinkling of a dilute solution of carbolic acid or Condy's fluid, or the placing of a little chloride of lime or other obnoxious preparation in a saucer, is and must be absolutely without importance. Deodorizers many of them doubtless are, but this power of annihilating stinks is not an unqualified advantage. Just as the use of salicylic or boracic acid in milk is undesirable because it enables the milk dealers to relax their efforts to secure absolute cleanliness and purity, so the use of deodorizers is to be deprecated, except under careful supervision, since without them purity and sweetness of the air of a sick room will only be obtained by the removal of all sources of contamination and proper ventilation. It is *asepsis* and not antisepsis that we require, and if the former means anything it means cleanliness. There is no fundamental reason why people should not continue to use the various substances at present in use, but it is absolutely necessary that they should be taught that safety can only be obtained by attention to matters of hygiene. They must be taught that medical men do not owe their comparative immunity from contagious diseases to the carriage of a bit of camphor or other amulet, but to their observance of the laws of cleanliness and common sense.—*The Medical Press and Circular.*

REMOVAL OF NECROSED BONE BY IRRIGATIONS WITH WEAK HYDROCHLORIC ACID.

Dr. E. Andrews says: In almost all cases of necrosis the dead bone can be removed without operation by the simple process of daily irrigation with diluted hydrochloric acid.

So far as my investigations have yet gone, I find no solvent equal to a weak solution of hydrochloric acid. Sulphuric acid seems to limit its own action by precipitating the insoluble calcium sulphate in the Haversian canals, and blocking the further access of the acid. Thin laminæ of bone will lie in a dilution of this acid for days with only a slight degree of decalcification. Chromic acid is also inefficient, and stains the linen on which it happens to drip. Nitric acid decalcifies the bone rapidly, but I have not yet finished the experiments for ascertaining its practical usefulness.

The proper strength of the hydrochloric solution varies with the tolerance of the patient, the object being to keep it just below the painful point. This will usually be found between one-fourth and one-sixteenth of the strength of the officinal *acidum hydrochloricum dilutum*, although it can be employed somewhat stronger by the addition of cocaine and morphine. The tolerance seems to be determined largely by the presence or absence of a good coat of granulations upon the living tissues. Directly after an operation, the cut extremities of the nerves are painful on the application of any acid, however weak; but after a few days, when covered by granulations, they bear comparatively strong solutions without difficulty.

The method of effecting the irrigation is important. If one simply pours a little acid into the fistula, as Billroth evidently understood the plan to be, he will accomplish nothing. It is necessary to irrigate the whole sequestrum either frequently or continuously. If possible, one should have two openings, so situated that the fluid may run into one, and thence along the whole length of the sequestrum and out at the other. When necessary, new openings must be made in suitable positions, and left pervious by drainage-tubes. The next step is to fill a half-gallon fountain syringe with the acid solution, and, hanging it up, let the solution run very slowly through the diseased channel. If a "through and through" irrigation is not possible, we can often obtain the same result by taking a small flexible catheter, especially of the kind having a curve near the tip, and called by the French *sonde coudée.* By a little careful management this can often be carried to the farthest corner of the cavity, and by attaching it to the fountain syringe it will deliver the fluid beyond the sequestrum, and make it flow over it on its return outside the catheter. Whenever the sequestrum can be thoroughly irrigated, its decalcification is a matter of absolute certainty within a moderate number of days. The hydrochloric solution is a perfect antiseptic of itself, and during its use no other is required.

After the solution is completed there remains the gelatiniferous animal matter of the bone, which is identical with the material of decalcified bone drainage-tubes, and like them is rapidly absorbed in antisepticized cavities. I have commenced to investigate the possibility of dissolving it out at once with pepsin, but have not finished that part of the subject.

Billroth raises the objection that the acid will dissolve the living bone as rapidly as the dead, or even more so. So plain a point as this of course cannot fail to rise in every one's mind, but I am sure that great man spoke from mere theory, and not from observation or experience. Whatever one might fear in this respect, I find as a matter of experience that the weak solutions which I have used do not decalcify living bone. Apparently the granulations covering the living osseous tissue protect it from contact with the acid, except in spots denuded by ulceration, and even there the circulation of the alkaline blood in the Haversian canals, and the constant exudation of alkaline serum from all raw living surfaces, bone included, protect it from the action of such weak acid dilutions as I have hitherto used. At any rate, it is a positive fact that the sequestra are dissolved, and the cavity heals without any perceptible injury to the living bone.—*Jour. Am. Med. Ass'n.*

Editor's Specials.

"Write the Vision and make it plain."

JOKE? OR SARCASM?

The editor—don't ask who—of a dental periodical—will not say which, but the best except the Ohio Journal—travelled some hundreds of miles to attend a meeting of a State Dental Society in a not very large inland city. Less than twenty miles from it is a little city of ten or twelve thousand inhabitants, and but one dentist from it attended the meeting. The unsaid editor, from this, drew the inference (without a corkscrew) that he was the only dentist there. After adjournment he visited this little city *and its dentist*, and describes his visit, in part, in this way: "As we walked about the quiet country town in the company of the local dentist, we were struck by the numerous salutations he received from the passers-by and the general friendliness of the nods bestowed. * * * In his office we found a modern dental chair, two or three instrument cases, a pedal, and an electric engine, two or three kinds of automatic mallets, a picture or two, a desk and other conveniences. A little distance away was a neat and *clean* laboratory, compact, and well fitted. The outer office was no less well equipped, the carpet was bright, the stove cheerful and a good heater, and the ventilation perfect. A well selected stock of books was noticed in the reception room, and everything about the office denoted the taste of a cultured professional gentleman. On inquiring we learned that the dentist usually devoted seven hours a day, to operating at the chair, or in performing necessary services included under the term dentistry. We found that he generally took from four to six weeks in the year to play in, or attend dental societies."

Further on is added, "His fees are moderate, yet his income is thrice that of a city book-keeper, three times that of a captain of police, and nearly as much as the pay and perquisites of a colonel of the regular army. * * * His one regret is that he cannot meet members of his profession daily or weekly to talk with and discuss topics of conjoint interest. He is a great reader, being a subscriber to nearly all the dental periodicals, at home and abroad, intermixing with these two or three good medical journals. * * * In reflecting on his present happy state and future prospects, we can see nothing to prevent his becoming famous where he is at present located. Have not Watt, Black, the lamented Webb, Thackston, Ingersoll, Corydon Palmer, Patrick, Keely and numerous others in the dental ranks, become widely known, although dwellers we might say in country towns? It is not cities or towns, or States or countries that make men great, but it is work and study, and the love of both that lead to greatness. We earnestly commend these as panaceas to our country brethren who are lamenting that they have no opportunities for expansion."

To get the full force of good advice it is sometimes necessary to describe the circumstances calling it out. This statement explains the length of our quotation above. The old rhyme beginning with

> "If a man would be wise he must think, *think, think,*"

starts correctly, but it is hard to think energetically and persistently without something to stimulate thought. And nothing in this line is better than association with others in the same lines of mental effort. The little game called "The Club of Authors" illustrates this. A leader is selected, a circle is formed, and all join hands. A subject is announced which all in the circle are to silently study for a given time—say three minutes. The leader calls, "Time," and all are to write in silence, on the subject for a similar period. Any one who tries the game, in good faith, will find his ability to write greatly improved.

The dentists who attend the society meetings are benefited in this, and many other ways. And those who do not avail themselves of this means of stimulation may continue to breathe, but professionally they become fossils. This may be their misfortune, but generally it is their fault, and their intelligent clients, if they have any, hold them responsible accordingly. And appropriate punishment is sure to follow; for the one thus guilty loses his self-respect, and when he cannot respect himself, others cannot respect him, and they will soon cease to patronize, in the absence of respect.

When it is a man's misfortune that he cannot avail himself of the best means of improvement, he is to be pitied, for he is an object of sympathy. But in most cases the inability is more imaginary than real, and at best is in accord with the old adage, "penny-wise, and pound-foolish."

All things considered, is it strange if the unsaid editor, who thought it worth while to travel several hundreds of miles to attend a meeting, came to the conclusion that the dentists who had formerly resided within twenty miles of the place of meeting, and who were not present, had died?

LIQUEFIED NITROUS OXIDE.

Does the process of liquefaction guarantee the purity of nitrous oxide? This is a very important question, and all the more so in view of the extensive and increasing use of the "compound oxygen" treatment, by physicians.

Chlorine, and nitric oxide may contaminate nitrous oxide. Both these gases are poisonous. If it were possible to inhale pure nitric oxide, a single breath of it would destroy life. But fortunately, even when it is largely mixed with atmospheric air, an attempt to breathe it causes instant spasmodic closure of the glottis, leaving a chance to restore the patient by artificial respiration.

Of course chlorine cannot be liberated from pure nitrate of ammonia; but sometimes the salt may contain traces of sal ammoniac, which is ammonium chloride. But nitric oxide may be obtained, in objectionable quantities, from pure nitrate of ammonia.

Chlorine is liquefied by about one-twelfth the amount of pressure necessary to bring the nitrous oxide to a liquid form. It cannot be separated, therefore, by pressure.

There is not much danger of the nitric oxide being liquefied, but is not the pressure of gas into liquids a familiar process? Nitric oxide is but slightly soluble in water, yet it can be readily pressed into it to such extent that there is explosive effervescence when the pressure is removed. In like manner it may be pressed into the liquefied nitrous oxide, and if so present in the retaining cylinder, it will escape into the gasometer with the nitrous oxide. The conclusion, therefore, must be that the process of liquefaction, in itself considered, gives no proof of purity. Still this process is of great value. Experienced chemists and experts can thus greatly extend their usefulness. And a dentist or physician established in practice cannot well find time to manufacture his own gas.

"CHANGES ARE HEARTSOME."—OLD SAW.

But the Journal doesn't believe it. It had got quite reconciled to seeing the energetic publisher, Mr. J. H. Chambers, running the *Archives of Dentistry* with its five-score man power, and no breaking of traces. We enjoyed and admired him as the small boy does the forty-horse-driver of the traveling show. We liked the *Archives* and all the editors, correspondents and Co., and especially its (or their) publisher. But, alas! the *Archives* is not alone with its Chambers now, for now and hereafter it is to be issued by an association of dentists in St. Louis, and we are not yet acquainted with the association, and feel sad about the change.

> "'Twas ever thus from childhood's hour,
> I've seen my fondest hopes decay;
> I never loved a tree or flower,
> But—"

Some vandal cut the tree down for a saw-log, and some flirt plucked the flower for a buttonhole boquet for her John Henry. (This last line is prose, excepting the first word.)

But we are used to disappointments, and will bear this one meekly, and will cordially wish the *Archives*, and all connected with it, most abundant success, and will continue so to wish, till we get over them all, even if we have to take them a half dozen at a time.

We'll give the publishing association our blessing, as soon as we get acquainted with it; for blessing, like chemistry, is one of the exact sciences, and must be practiced intelligently. But for the present and a brief future, we'll concentrate our patriarchal benedictions on the editors, associates, and special contributors. We'll concentrate our kindly affections, for a time on a group of five, drop them and take a fresh group, aiming to double the dose of friendly feeling with each change, and if we succeed, it becomes plain, by a problem in geometrical progression, that the last group will be so filled with beatitude that they will have to start at once for "kingdom come."

But seriously, all this, and more, if we could, for *our* brethren of the *Archives*, for we like them, and for their sake the *Archives*, while we esteem it for its merits.

Our superstition has led us to *feel*, rather than to believe that a dental journal is quite too sacred to be issued by average, profane publishers, who would as willingly publish a comic almanac, if similar financial inducements were offered. And though this change started a sad thought, by suggesting the instability of things earthly, yet we are already reconciled in judgment, believing the present arrangement more nearly in accord with "the eternal fitness of things."

We shall be pleased still to receive, read, admire, approve, criticise, and perhaps tease the blessed *Archives*, according as circumstances may seem to require.

We have tried to write cheerfully in our sorrow, but fear we have failed.

PAST AND PRESENT.

The *Review* says, "Dr. Ingersoll's 'Dental Science' is receiving the honor of a French translation."

All right. We found Dr. Ingersoll in 1854, and had never heard of him. But we told the boys, such as Profs. James Taylor, H. R. Smith, John Allen, J. Taft and other fellows, that he was coming. And here he is, and has been here for some time.

As a singular co-incidence we found Dr. Atkinson, at the same visit. On our zigzag way to where we found them we asked more than a score of dentists as to the dentists to be found in a certain place. Nearly all named Dr. Strickland, and a few mentioned Dr. Slosson. Not one told of the two boys we found. Their offices were on opposite sides of a spring branch, so deep that it fairly split the ground, and hence the region was known in early days as the cleaved land. And when civilized surveyors came to measure the land, they found a cow drinking at, and a little below a hog wallowing in the creek. For convenience they called it, for the present, the cow-and-hog creek. The little rill grew (in name) to Cuyahoga river, and a hamlet or two grew to a city, with one very Superior street, laid out according to Euclid (avenue) and, therefore, geometrical throughout. The pioneer settlers would cleave to the original idea of the split land, but consented to bad spelling, and hence the name is Cleveland.

But our two boys, then hammering on the foundations of their professional reputations—did they grow too? Not they; but their reputations did. Like the trees on the lower Mississippi, they grew till they drew themselves out of root, and one fell east and the other west,—the split land could no longer hold them—and like the vine that came out of Egypt, they fill the land with good counsels and wise instructions.

All of this we saw; and part of it we were. Could we give a better illustration of professional progress?

Now, good readers, add a page or two of morals to this, and it will be finished. Thirty years allow time in which to build a reputation. But though these were not heard of then, how many, even with them at that time, are not heard of now? Don't answer—haven't time to listen, and don't want to know. Then they were "boys"; and we, too, were a youngster. But now, yea, verily, in the language of Lawrence's amalgam—

"*Tempus* continues to *fugit*."

THE MISSISSIPPI VALLEY ASSOCIATION.

The next meeting, on March 7th, of this landmark among societies, will be one of the olden kind with all the modern improvements. Read Prof. Wright's announcement, on another page, and prepare to go for the whole meeting. It will do you good, do your brethren good and benefit your patients. Not half that is to be gotten out of a meeting ever gets into the journals, therefore you can't "stay at home and get it all." Go!

OBITUARY.

WALTER A. DUN, M. D.

DIED—DUN.—Monday, November 7, 1887, at 2:43 P. M., at 103 East Third street, Cincinnati, of remittent malaria, complicated with cerebral-meningitis, Walter Angus Dun, aged 30 years, 8 months and 7 days. Interment at Dayton, Ohio.

Many of our readers will recall Dr. Dun's paper on Hypnotism read at the meeting of the Mississippi Valley Dental Association last March, and published in the Journal. Those of us who knew him esteemed it a privilege to call him friend, and all who knew him loved him. His death came as a shock and a surprise to those who remembered his fine physique and the picture of perfect health that he was. The following tribute we copy from the *Cincinnati Commercial Gazette*:

"The *Commercial Gazette* announcing the sad death of Dr. Walter A. Dun lies before me, together with a characteristic letter of the deceased written a short time since, when, in the glow of health and prosperity, this brilliant young man had reason to hope for a long life of usefulness and honor. The letter was called forth by a biographical sketch prepared for a magazine by the writer of this humble tribute. 'I hope to secure you as a biographer,' he gallantly wrote. 'I lay no pretensions to fame. I am and hope to remain very simple and plain; but I think you are able to manufacture much out of little, and this I am certain you would have to do in my case.' Little did he dream while penning these lines how fast his young life was drifting to the source of all simplicity.

The success already attained in his profession augured much for his future. To marked ability and versatile talent Dr. Dun added plodding industry and unquenchable enthusiasm, together with a sincerity and graciousness of manner that made every one that knew him his friend. Simple he was through his brief, bright life, and simple he would have remained, we believe, had long years and worldly honors been his, for simplicity was an inherent quality. It was this that lent to his character so indefinable a charm, making his presence ever welcome among the poor and lowly, where he was no less beloved than in the social world, where his fine mind and genial humor made him a favorite. There is much of the heroic in this brilliant physician's short life, much of which the world will never know, but which will live and color the lives of many a hospital sufferer or tenement lodger. His was always a pure and wholesome influence. To help the struggling aspirant was one of his greatest pleasures. Biographical literature might well be enriched by the lives of every-day people. Simple and plain was this young physician, despite his talents and success, but so rich was his inheritance of these humble qualities that his biographer would have no occasion to manufacture. He had hoped to accomplish much good in his profession. With this intention he worked industriously, but before the dawn of life's noon the night came, when no man can work. The effect of such a life can never be fully estimated. We had hoped to see him realize all his anticipations, but it has pleased the wisdom of Him who shapes our destinies to take him back to the heart that gave him.

COLUMBUS, O. L. R. M."

ACCORDING to Prof. Gamgee, the total income and expenditure of energy in the human body, corresponds to the amount of heat required to raise 595 lbs. of water from the temperature of melting ice to the boiling point. He conceives that the heat is produced first, in the muscles, and secondly in the glands.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

Creolin, a New Antiseptic, is prepared from heavy coal tar oil. It is said to destroy all bacteria, bacilli, etc., is very nearly non-poisonous, and cheaper than carbolic acid.

Recovery from Anæsthesia.—When a patient is recovering from the effects of an anæsthetic if the eyes are kept closed it will add materially in preventing after effects such as nausea, dizziness, and uneasiness of the stomach.

Eucalyptol and Gutta-Percha Stoppings.—It should be borne in mind that eucalyptol dissolves gutta-percha and care should be exercised in its use about those mouths in which there are fillings of gutta-percha or Hill's stopping.

Lining for Trial Plates.—Before waxing up an artificial denture if tin-foil be burnished over the surface of the model, and the waxing done on this, we get a material that readily parts from the cast, and furnishes an excellent surface for the trial plate.

Some Points about Mercury.—Mercury of commerce is seldom pure; the impurities being chiefly lead, but tin, zinc, and bismuth, are often present. To test the metal, scatter a few globules upon a clean glass; if it be much impure a black trail will be left. A simple method of purifying is to place the metal with some loaf sugar in a bottle, which, after being securely corked, is shaken vigorously for a short time, then uncorked and more air supplied by means of a bellows, the bottle recorked and again shaken. After repeating this operation three or four times the mercury may be filtered through a cone of smooth paper with a pin hole at its apex. The sugar to which the oxides of the foreign metals adhere, remains behind. Another method is to place the mercury in a shallow vessel and cover it with a solution of nitric acid, one part to four of water, and let it remain for a few hours, stirring occasionally, then wash out the acid and it is ready for use. In the metallic form mercury does no injury when applied to the skin. On contact with alkaline chlorides it is readily converted into a soluble double chloride. Mercuric chloride has a distinct corrosive action when applied to the skin, on account of its affinity for albuminoids, and being very soluble it is rapidly absorbed, and its poisonous effects are manifested. Mercury dissolves all metals except iron. It amalgamates readily with tin, gold, silver, zinc, platinum, and copper.

ANNEALING STEEL.—Heat in a forge, slowly as possible, then lay between two fire-boards and screw them together in a vise. The hot steel sinks into the wood and becomes imbedded in an almost air tight charcoal bed. When cold, remove and it will be found to be nice and soft. To repeat this will make it as soft as could be wished.—*Blacksmith and Wheelwright.*

TO DESTROY PULPS OF TEMPORARY TEETH.—DR. EDMUND NOYES says: I very rarely use arsenic for destroying pulps of the temporary teeth, because the pulps are quite vascular, and the circulation of the child is rapid, and bad results might accrue at a point beyond the apex of the tooth. I use, generally, 95 per cent. carbolic acid, in repeated applications.—*Dental Review.*

AN APPLICATION FOR DEVITALIZED PULPS.—When powdered tannin is dissolved in alcohol to the consistency of ordinary maple syrup, it is very useful for application to a devitalized pulp, to abstract the water, and diminish the size of it. After removing the arsenic, we wipe the cavity with dialyzed iron, then apply a bit of cotton moistened with the above named solution, and seal the cavity with gutta-percha. Punch two or three holes in the gutta-percha, and let it remain in the tooth one week. The pulp can be removed, and the root filled at once.—*Dental Review.*

SETTING CROWNS.—DR. A. B. CRAWFORD says in the *Items of Interest*, For a Bonwill or Logan crown I prepare the root properly, and fit about it a narrow band of twenty-two carat gold, twenty-nine gauge, also a thin cap of platina, which is soldered to the band about midway from top to bottom; the centre being perforated to allow the pin to pass through. If for a Bonwill crown, I first set the pin firmly in the root, and follow by setting the banded cap with oxyphosphate. The crown is ground to fit the band above the cap very closely, and also set with the same kind of cement. It makes a perfect piece of work, and one that can scarcely ever fail by the cement dissolving away from between root and crown.

WHY EUCALYPTOL IS SOMETIMES DISAPPOINTING.—DR. W. H. MORSE says: I submit that the true eucalyptol is that obtained from the leaves of the *eucalyptus globulus;* that the oil obtained from the other eucalypti is more or less inert; that much of the eucalyptol in the market is a mixed product from several species, some of it containing none of the oil of the *E. globulus* leaves; that some of these mixed specimens are adulterated with a terebinthianous oil of the wood, with alcohol, turpentine, or some fixed oil; and that the essential oil of the *E. globulus* leaves (the true eucalyptol) is alone of medicinal value. The oil distilled in this country is practically useless, as the bulk of the imported leaves are other than those of the *E. globulus,* and because, (even unmixed,) the dry leaves yield a very small per centage of oil, and the temptation to adulteration is strong.

Comparative Anomalies in Right and Left Handed Persons.—Dr. Galippe in the *Journal des Connoisances Médicales*, publishes his observations on right and left handedness. Regarding dental anomalies he says he found that anomalies are more frequent in the left upper and lower maxillaries, than in the right; that among right-handed people the maxillaries are less developed to the left than to the right, and are more frequently the seat of lesions of development, and anomalies of eruption or of nutrition.. Among left-handed people the reverse is observed. Generally, the accidents incidental to the eruption of the wisdom-tooth are more frequent to the left than to right, which is explicable by the lesser development of the left maxillary, and consequent want of space for the eruption of the tooth. The author cites forty-one cases of dental anomalies to the left, of which he gives the details. He then produces twenty-three cases of anomalies observed in the right maxillaries, of which three belonged to left-hand people, and should, therefore, be eliminated. Therefore, out of the sixty-one observations of maxillary anomalies (right-handed people) there were forty-one on the left and twenty on the right side, which amounts to about fifty per cent. in favor of the left·—*Medical Register.*

Acidulated Sublimate Solutions.—Dr. Laplace says: It is found that as soon as a sublimate solution comes in contact with an albuminous fluid, the albumen coagulates and forms with the bichloride, a precipitate which has lost all disinfectant properties. Dr. Laplace has proved that by a series of experiments that not only is the precipitate devoid of disinfecting power, but also the supernatant liquid. After many fruitless experiments he found at last the principle which he was seeking, namely, the addition of an acid; such an acidulated solution will not form an insoluble albuminous precipitate. He usually adds five parts of hydrochloric acid to a thousand of a solution of corrosive sublimate (1 to 1000), though occasionally he substituted tartaric acid or carbolic acid. This acid solution

1. Makes no deposit of sublimate after standing (as all the sublimate solutions do) thereby retaining a permanent strength.
2. When brought in contact with an albuminous fluid, the albumen will remain in solution, and the whole strength of the solution of sublimate will be obtained as in non-albuminous fluids.
3. An acid medium is unfavorable to the development of micro organisms. The addition of an acid to a sublimate solution also increases its disinfecting powers, so that a much weaker solution is required.—*Med. Analectic.*

The Cause of Variations in the Texture of Vulcanized Rubber.—Dr. George B. Snow says: The texture and toughness of dental plates would be much improved if they were vulcanized for one and a half or two hours and at a lower temperature than is generally used. It has been ascertained that under the usual management, thermometers will vary considerably in their indications; and that many a piece of rubber is vulcanized at 335°, 340°, or even 350°, when the dentist has no idea that the temperature has exceeded 320°. The great source of irregularity in the action of thermometers is the presence of air in the vulcanizer. The mixture of air and steam above the water is a bad conductor of heat; as it varies in quantity, according to whether the water level is higher or lower, and as the proportion of air and steam may also vary, it will be seen that a greater or less obstacle is placed in the way of the heat as it passes to the thermometer bulb. It is no uncommon thing to see the indications of a thermometer, as compared with the action of a steam-gauge or gas-regulator, vary even as much as 20° after this air has been expelled from the vulcanizer. After the air is expelled the thermometer will at least be constant in its variation; but the variation consequent upon the presence of air in the steam-space may be 5°, 10° or 20° and cannot be predicted with any certainty. It may be laid down as a rule, then, that the results attained will be uniform if enough steam is allowed to escape from the vulcanizer while it is heating, to carry off with it the confined air.—*Dental Advertiser.*

ADVISABILITY OF ADMINISTRATION OF NITROUS OXIDE IN SPECIAL CASES.—DR. S. H. GUILFORD says: In *phthisical* persons the danger will be more or less great according to the extent of the disease. In the advanced stages it being better to avoid the administration if possible.

In *apoplectic* persons of full habit, with short, fat necks, there will usually be no difficulty, provided the clothing about the throat be loose and the head kept as nearly as possible on a line with the body. Respiration being more interfered with in these than in those of slender form.

Epileptic persons can inhale the gas without danger. A seizure may precede or follow administration but cannot occur during it. In either case we need but follow the usual course of placing the patient in a recumbent position, loosen the clothing, and see that there is not too long a suspension of heart action.

Hysterical patients, while recovering from the influence of the gas, often give way to their prevailing emotions in a manner calculated to alarm a novice, but experience will show that no danger need be apprehended from their manifestations.

Alcoholism is a condition very unfavorable for the administration of the gas.

Menstruation has proven to be no bar to its administration.

Pregnancy, not later than the seventh month, has been found not to be interfered with by the extraction of a few teeth while the patient was under the influence of nitrous oxide. Later than the seventh month might be safe but it is not advisable.

Lactation does not contra-indicate the exhibition of the gas. Mr. Braine mentions two cases in which the shock attending extraction of a tooth without gas stopped the secretion of milk, whereas the same patients underwent similar operations a little later, under the influence of the gas, without any ill results.

Age seems to present no barrier to the use of nitrous oxide. It may be given, other conditions favorable, as early as the child can be made to inhale properly, or quite late in life. Mr. Braine states that he has given it to a patient at the age of ninety-four. The author has administered it to patients three years of age and again to those of nearly eighty.—*Abstract from Guilford's Nitrous Oxide.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Indiana State Dental Society holds its next annual meeting at Terre Haute, Tuesday, June 26, 1888.

Illinois State Dental Society at Cairo, Tuesday, May 8, 1888.

Iowa State Dental Society at Iowa City, Tuesday, May 1, 1888.

Kansas State Dental Association at Topeka, Tuesday, April 24, 1888.

Michigan State Dental Association at Ann Arbor, Tuesday, March 27, 1888.

Mad River Dental Society at Dayton, O., Tuesday, May 19, 1888.

Nebraska State Dental Society at Beatrice, Tuesday, May 15, 1888.

Northern Ohio Dental Association at Painesville, Tuesday, May 8, 1888.

Mississippi Valley Dental Society at Cincinnati, Wednesday, March 7, 1888.

SOUTHERN ILLINOIS DENTAL SOCIETY.

The second annual meeting of this society will be held in Centralia on Tuesday and Wednesday, April 10 and 11, 1888. A good programme is promised and we urge a full turnout of Southern Illinois dentists especially, while the dental profession in general is invited to attend.

G. W. Entsminger, *Secretary*,
Carbondale, Ill.

ST. LOUIS DENTAL SOCIETY.

The St. Louis Dental Society at its annual meeting January 3d, elected the following officers for 1888:

President, Dr. Henry Fisher; *Vice-President*, Dr. J. Warren Wick; *Corresponding Secretary*, Dr. Wm. Conrad; *Recording Secretary*, Dr. J. H. Spalding; *Treasurer*, Dr. A. J. Prosser.

Committee on Elections and Ethics, Drs. J. B. Newby, Geo. P. Holmes, W. N. Morrison.

Publication Committee, Drs. A. H. Fuller, W. H. Eames, Geo. A. Bowman.

Wm. Conrad, *Cor. Sec'y.*

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

The 44th annual meeting of this society will be held in Cincinnati on the first Wednesday in March, 1888.

The following is a partial list of the papers which will be read and of the subjects for discussion:

The Dental Pulp.—Junius E. Cravens, D.D.S., Indianapolis.

Immediate Root Filling.—H. A. Smith, D.D.S., Cincinnati.

Implantation, with clinical demonstration.—M. H. Fletcher, D.D.S., M.D., Cincinnati.

Combination Fillings.—H. J. McKellops, D.D.S., St. Louis.

Constitutional Aspects of Pyorrhœa Alveolaris.—J. R. Callahan, D.D.S., Hillsboro', O.

Incidents of Office Practice.—Papers from several distinguished writers promised.

Prize Essay.—*Subject.*—The Causes of Deposits on the Teeth and Methods of Removing the same.

Voluntary Papers.—Dr. W. D. Miller, Berlin, Germany. Dr. N. W. Williams, Geneva, Switzerland, and others.

Displays of new instruments and dental appliances of great variety.

President, A. W. Harlan, Chicago; *Secretary*, A. G. Rose, Cincinnati.

This society while modestly admitting its titles of venerable, classical, paleontological, etc., as correct and appropriate, also bears the modern title of "wide awake" with as much grace.

C. M. Wright,
Chairman of Ex. Committee.

Books and Pamphlets.

The Dental Review for January contains 56 pages of interesting reading matter. We are always glad to receive the *Review* and consider it one of our best exchanges. The contributions are good and the Editor's specials are always reliable and of special merit. The memoranda also furnishes a deal of general information. In looking over the pages we can but notice the characteristics of its editor, for the journal is neat, clean, practical, and always filled with new ideas that are of worth to the whole profession.

The Independent Practitioner. In the January number we find the continuation of the "Contributions to the History of Development of the Teeth," by Drs. Heitzmann and Bödecker. An interesting article on "Dental Education in Germany," by Dr. W. D. Miller, of Berlin. Besides these and other contributions the other pages contain society reports, and several of Dr. Barrett's editorials which are always interesting.

The Dental Cosmos is filled as usual with profitable reading matter, among its special features being the reports of the New York societies.

The Items of Interest contains its usual general information, and a portrait of its Editor, Dr. T. B. Welch, as a frontispiece. This is a new departure for the *Items*, but it follows in the foot-prints of the OHIO JOURNAL which for the past year has given its readers the benefits of these engravings and biographical sketches.

The Dental Register, Dr. J. Taft, Editor, for January contains an illustrated article on "Protective Dentine," by M. H. Fletcher, M.D., D.D.S. The other articles are mostly papers read at the Ohio State Society.

Altogether it is a good specimen of American journalism.

Our Aftermath.

MARRIED.—Dr. Louis Ottofy, associate editor of the *Dental Review*, was married Dec. 27, 1887, to Miss Nellie Freeman, of Englewood, Ill.—*Dental Review.*

The OHIO JOURNAL extends heartiest congratulations and best wishes.

OHIO COLLEGE OF DENTAL SURGERY.—Within the past week arrangements were completed making this institution a department of the University of Cincinnati, and it will be known hereafter (in addition to its old name) as the Dental Department of the University of Cincinnati. This annexation with the University is intended as a convenient mutual working arrangement, the college remaining in its present property and under its present management. We think that both institutions are to be congratulated upon so happy an arrangement.—*Cin. Com. Gazette, January* 9, 1888.

THE
OHIO JOURNAL
OF
DENTAL SCIENCE.

VOL. VIII. MARCH, 1888. No. 3.

Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

CASE IN PRACTICE.

BY GEORGE W. KEELY, D.D.S., OXFORD, OHIO.

A LITTLE Miss was aged eight years, when she came to me in 1884, with the four permanent first molars erupted and in contact. The temporary cuspids and left superior molar were firm in their positions, all the others had been extracted excepting the superior laterals. Their retention caused the permanent laterals to erupt inside the arch, and when they came in contact with the inferior ones, forced the latter inside the arch and out of line; there being no locking, which is rarely the case when the laterals make their appearance so far inside the arch. Both the superior and inferior incisors were almost fully erupted. The superior laterals were *one-fourth* of an inch out of line—inferior, not quite as much. Superior temporary laterals were removed and the palatine half of their roots absorbed, but they were rather firm in place. Had they been removed on the first appearance of their successors, the pressure of the tongue and processes of nature (the latter always working for our good) would doubtless have caused these malposed laterals to assume their normal position.

But in all such cases it is prudent to instruct the patient to frequently press the teeth outward with the thumb. Fig. 1 shows the condition of the teeth, the model being made a few days after the removal of the temporary laterals.

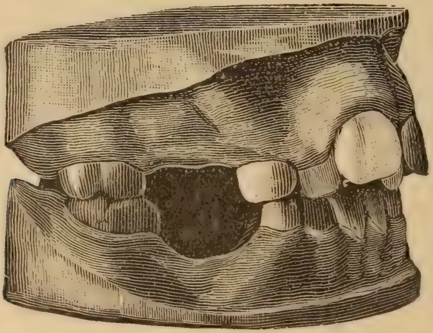

FIG. 1.

In this case we found it necessary to make an appliance to force the superior laterals to their normal position, it being a vulcanite plate covering the roof of the mouth, and firmly held in place by being clasped to the right permanent molar and left temporary one—that part of the plate on palatine surface of the laterals covered about one-half their length—holes were drilled, and compressed pine pins were adjusted and the plate put in position, the pins bearing hard on the refractory laterals. We saw the patient at least every other day, when the plate was removed, cleansed, and new pins adjusted. Within two weeks the teeth were in line. During this time she attended school regularly, and made no complaint as to pain or inconvenience. In the mean time, the inferior laterals were brought out in line by simply tying a No. 40 cotton thread to the right temporary cuspid, carrying it back of the lateral and in front of the centrals, back of the other lateral, drawing it tight and tying to the left cuspid. This was repeated three times when the teeth were in line. Then they were held in place by the same means for about ten days.

When the contact of the superior laterals was removed from the inferior, it is my opinion that the latter would have taken their normal position without any outside assistance.

The temporary laterals removed were not pulpless, the cutting edge of their successors in erupting pressed on the palatine surface of the roots, giving them an inward incline. This is occasionally the case.

Fig. 2 shows the appliance used to force the superior laterals in line—the model being taken after this was accomplished.

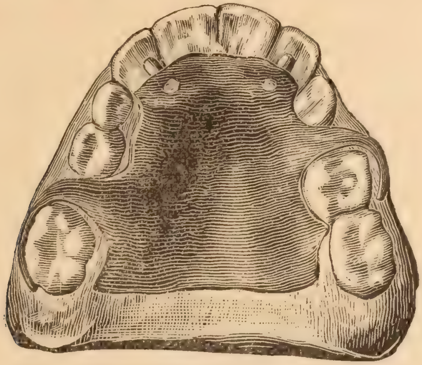

Fig. 2.

The patient is now nearly twelve, all the rest of her permanent teeth are in place excepting the superior cuspids, they being about half developed, with a slight tendency to crowding, but as she is developing rapidly, they will have ample space to come properly in line. A very thin retaining plate was adjusted to hold the laterals firmly in their new position, and used for about a month. Wire springs can be put in the plate in place of the pins, and made to operate effectually and rapidly.

A large per cent of irregularity is caused both by the premature extraction of the temporary teeth (particularly the *cuspids* and *molars*), and their retention beyond the time nature should expel them. The greatest danger is when the pulps are dead, for in such cases their successors will rarely expel them, but will be turned aside, appearing either outside or inside the arch, and if a majority are pulpless, and no attention is paid to removing the *obstructions* at the *proper time*, the occlusion of the permanent set will be broken up and serious irregularity exist.

As a rule, this can be wholly prevented by the intelligent operator, if the child is put in his care at the *proper* time. When parents are better educated and learn to appreciate the importance of saving their children's temporary teeth, there will be less irregularity from the causes referred to. May the time soon come when we will see less of it.

DENTAL AMALGAM—Prevention of Contraction, Etc.

BY DR. S. K. J.

In the winter of 1846–7 my preceptor, the late Professor James Taylor, M.D., D.D.S., suggested that my ambition in professional matters was likely to be somewhat stimulated, and my interests therein promoted by attendance at the meeting of the Mississippi Valley Association of Dental Surgeons, then in convention assembled. Attending the meeting I heard interesting and animated discussions, relative to the use of amalgams in dental operations, some approving and others deprecating the practice. The amalgam question was then forty years younger than now; and from thence to the present date it has been a theme for consideration and discussion in many of our leading dental societies and dental periodicals, both in this country and on the continent of Europe.

My purpose in writing this article is to show wherein and why so many of the dental amalgams of the past have failed from shrinkage, also to point to or demonstrate a method of procedure, whereby shrinkage may be overcome in the amalgams of the future.

In order to accomplish this double purpose, I will begin by quoting, with a large measure of freedom, from the writings of men who, within the lapse of the passing half century, have given the subject of dental amalgams special attention. In the winter of 1861–2 Mr. John Tomes, of England, presented to the Odontological Society of Great Britain a report of a series of tests of amalgams in search of proof of shrinkage, non-shrinkage, or expansion. Mr. Tomes method of proof consisted in filling with amalgams holes made for the purpose in slips of ivory. Seven different amalgams were experimented with in filling said holes, six of which showed contraction. The seventh was an amalgam composed of copper and mercury only, which did not give evidence of shrinkage or expansion. In 1868, a Mr. Mummery, of England, stated before the same society that some amalgams expanded in hardening. In a communication to the *British Journal of Dental Science* in the winter of 1871–2, Mr. Kirby, of

England, stated that an amalgam composed of pure silver and mercury only expanded greatly in hardening, to the extent of $\frac{1}{40}$th diameter or more.

In order to obtain a degree of exactness, in a system of measurements, Mr. Kirby had an instrument constructed, which on its face would indicate the successive measurements of the one-thousandth part of an inch, of either contraction or expansion. The record presented on the face of the instrument indicating the sum of *expansion* in an amalgam composed of precipitated silver and mercury only, was in fifteen minutes after packing $\frac{2}{1000}$ of an inch. In twenty-four hours $\frac{3}{1000}$ of an inch. In thirty-nine hours $\frac{4}{1000}$ of an inch, after which time there was no perceptible change.

In 1873, Mr. Fletcher suggested that shrinkage was not the only evil accompanying amalgam fillings, that the tendency in amalgam to assume a spheroidal or globular form, is as great if not a greater evil than the tendency to shrinkage. I will assume that most of those who may read this article, have read with much interest and profit, certain papers that were published in pamphlet form by order of the Odontological Society of New York, in 1875. The first of these was from the pen of Thomas B. Hitchcock, M.D., D.M.D., treating on the Physical Properties of Dental Amalgams. The second was from the pen of E. A. Bogue, M.D., D.D.S., treating on the Physical Properties of Amalgams, and their Pathological Action on Tooth Substance and other Associated Organs. Inasmuch as the chief points which I propose to place before my readers, is to set forth the cause of shrinkage, and more especially the method of preventing it in the amalgams of the future, I will quote from these papers only such items as in my judgment will best serve my purpose. I find in Dr. Hitchcock's paper an extended statement concerning results obtained by means of numerous experimental tests of amalgams, chiefly of American production, and those that were most in use at the date of the Doctor's proof tests.

Three methods of procedure were adopted by Dr. Hitchcock in his efforts to discover the presence or absence of either contraction or expansion, from only one of which I will quote, viz., his method of measurement by means of a micrometer, devised and constructed for the purpose, on the face of which was placed an index pointer, constructed in a manner to pass over an area or circle, which on its outer periphery or border line, was made to indicate the successive measurements of the one-thousandth part of an inch of either contraction or expansion. The quantitative analysis of each amalgam tested by this measuring instrument was given to Dr. Hitchcock by Dr. E. S. Wood, Professor of Chemistry in the Harvard Medical and Dental Schools. The first named in Dr. Hitchcock's list of tests, was Arrington's alloy. Dr. Wood's analysis showed its composition to be, silver 40 per cent. and tin 60 per cent. Within the first half hour after a careful mixing with mercury and packing the same in the tube of Dr. Hitchcock's measuring instrument, the shrinkage amounted to $\frac{4}{1000}$ of an inch. After twenty-four hours the pointer on said instrument showed $\frac{45}{1000}$ of an inch shrinkage.

Dr. Hitchcock's second test was with what is called Diamond Alloy. The analysis of this was given as follows: $31\frac{76}{100}$ silver, $66\frac{74}{100}$ tin, and $1\frac{50}{100}$ gold. In forty-five minutes it shrank $\frac{3}{1000}$ of an inch. In twelve hours it shrank $\frac{5}{1000}$ of an inch. Twenty-four hours showed no further change. The third test was with Hood's Alloy, $34\frac{64}{100}$ silver, $60\frac{37}{100}$ tin, $2\frac{70}{100}$ gold, $2\frac{29}{100}$ iron. In three hours it shrank $\frac{1}{1000}$ of an inch. In six hours, $\frac{2}{1000}$ of an inch. In twenty-four hours more it remained unchanged. The fourth test was Johnson & Lund's Alloy, $38\frac{27}{100}$ silver, $59\frac{58}{100}$ tin, $1\frac{34}{100}$ platinum, $\frac{81}{100}$ gold. In fifteen minutes it shrank $\frac{1}{1000}$ of an inch.

The fifth test was with Lawrence's Alloy, $47\frac{87}{100}$ silver, $33\frac{68}{100}$ tin, $14\frac{91}{100}$ copper, $3\frac{54}{100}$ gold. In two hours it shrank $\frac{1}{1000}$ of an inch; in four and one-half hours it shrank $\frac{2}{1000}$ of an inch; in thirteen and one-half hours $\frac{3}{1000}$ of an inch, with no further change in twenty-four hours.

Sixth test—Moffits Alloy, $35\frac{17}{100}$ silver, $62\frac{1}{100}$ tin, $2\frac{82}{100}$ gold. After one quarter of an hour it had shrunk $\frac{1}{1000}$ of an inch; after twelve hours $\frac{2}{1000}$, with no further change in twenty-four hours. Seventh test—precipitated silver and mercury only, in fifteen hours, expanded $\frac{2}{1000}$ of an inch; in twenty-four hours, $\frac{3}{1000}$; in thirty-nine hours showed continued expansion to $\frac{4}{1000}$ of an inch; after which no further change appeared.

Eighth test—Townsend's Alloy, $40\frac{21}{100}$ silver, $47\frac{54}{100}$ tin, $10\frac{65}{100}$ copper, $1\frac{6}{100}$ gold. In five minutes it shrank $\frac{1}{1000}$ of an inch; in forty-five minutes, $\frac{2}{1000}$; in two hours, $\frac{3}{1000}$; in time not given, $\frac{4}{1000}$. Ninth test—Townsend's Improved Alloy, 39 silver, $55\frac{65}{100}$ tin, $5\frac{31}{100}$ gold. In fifteen minutes it shrank $\frac{18}{1000}$ of an inch. After twelve hours the shrinkage had lessened to $\frac{14}{1000}$.

Tenth test—Walker's Alloy, $34\frac{89}{100}$ silver, $60\frac{1}{100}$ tin, $4\frac{14}{100}$

gold, and $\frac{96}{100}$ platinum. In one-half hour it shrank $\frac{1}{1000}$ of an inch; in two and one-half hours $\frac{2}{1000}$; in twenty-four hours no further change.

In reviewing the list of amalgams tested by Dr. Hitchcock, omitting the one composed of precipitated silver and mercury only, I discovered that the remaining nine present, in each instance, more or less contraction. This fact, as I view it, is a result consequent upon the absence of silver in sufficient quantity to prevent shrinkage. Also that I discovered that the same remaining nine, averaged in silver, thirty-eight per cent. The highest per centage is seen to be in Lawrence's alloy, viz., 47¾ per cent silver; next highest, Townsend's alloy, 40 per cent silver; next Townsend's improved alloy, 39 per cent, (just one and one-half per cent. less silver than in his former alloy, and instead of being labeled Townsend's improved alloy, it should have been labeled Townsend's degeneration, in consequence of increased shrinkage, and containing a less amount of silver as compared with his former alloy.)

The next highest in per centage of silver in the list of nine was Johnston & Lund's alloy, 38½ per cent. Next, Moffit's alloy, 35½ per cent. Next, Walker's alloy, 34½ per cent. And, last of the nine, Diamond Alloy, 31¾ per cent. Dr. Hitchcock's experiments with precipitated silver and mercury only, and those by Mr. Kirby, of England, in the winter of 1871–2, are in harmony with each other. Each reported $\frac{4}{1000}$ of an inch expansion in thirty-nine hours.

In calling attention to the paper of Dr. Bogue, my intention is to quote only from his statements relating to contraction and expansion in amalgams and from those relating to the names of the different metals that entered into the composition of the amalgam alloys experimented with, passing all other points of interest noted in the Doctor's paper, excepting only his statement that to obtain a more exact measurement of the amount of contraction or expansion, he had an instrument constructed, on the face of which was inscribed a circle of spaces or steps. A long arm, or pointer, was constructed in a manner to allow it to pass either way over the circle; each space being called a degree, and each degree representing the thirty-six hundredth part of an inch.

With special care each filling of amalgam preparatory for measurement was packed within a steel tube, exactly one inch in length. According to the report given in the Doctor's paper, the first filling of amalgam tested by means of this measuring instrument, was prepared from Lawrence's alloy, said to be composed of silver, tin and copper, which, when prepared in the form of an amalgam, was carefully packed within said steel tube preparatory for measurement. In one-half hour after packing it, the arm or pointer showed a movement of two spaces or degrees on the circle. Two days after packing the pointer indicated 5 degrees contraction, and it appeared not to change further during the lapse of a week. A second trial of the same alloy, with a little increase of mercury, in twenty-four hours showed a contraction of $5\frac{1}{2}$ degrees. The second alloy tested by the Doctor was Burlingame & Baker's Diamond Alloy, composed of silver, tin, gold and platinum. The amalgam produced by the use of this alloy, and those used in all succeeding tests, were packed and measured with equal care and precision. In fifteen minutes after packing, the pointer indicated a little more than two degrees contraction. Next morning showed $5\frac{1}{2}$ degrees contraction, which was not varied from in twenty-four hours. Third test—Johnston & Lund's Extra Alloy, composed of silver, tin, gold, platinum, with a trace of cadmium. In fifteen minutes this shrank $4\frac{1}{2}$ degrees, in twenty-four hours 5 degrees, after which no further change for some days. After a week or more the pointer showed 16 degrees of contraction.

Fourth test—Walker's Excelsior alloy, composed of silver, tin, gold and platinum. First trial it shrank, in all, 8 degrees. The second trial, packed dry, shrank, in fifteen minutes, 3 degrees. Fifth test--Holmes's Star Alloy, composed of silver, tin and gold. In fifteen minutes it shrank 3 degrees, and next morning showed 5 degrees shrinkage. Sixth test—Arrington's New Alloy, composed of silver and tin. In six minutes it shrank 3 degrees; in twenty-four hours $4\frac{1}{2}$ degrees. Seventh test—Townsend's Alloy, composed of silver and tin. Within ten minutes it contracted 13 degrees. A second mixing of the same alloy showed $8\frac{1}{2}$ degrees of contraction in twenty-four hours. Eighth test—Fletcher's platinum and gold alloy, yielding on assay, these two different results: First, silver $37\frac{63}{100}$, tin $55\frac{47}{100}$, gold $3\frac{60}{100}$, platinum $3\frac{30}{100}$. Second assay: silver $39\frac{50}{100}$, tin $55\frac{40}{100}$, gold $5\frac{10}{100}$, platinum none. This alloy required but a small amount of mercury to produce a plastic amalgam. Fifteen minutes after packing the pointer showed 2 degrees of shrinkage. Twenty-four hours did not show additional change. Ninth test—Hood & Reynold's Alloy, composed of silver, tin and gold. In ten minutes it showed 2 degrees of contraction. Tenth test—composed of copper precipitated upon mercury. Twenty-four hours showed neither contraction nor expansion. Eleventh test—precipitated palladium. The pointer did not move for fifteen minutes. Next morning showed 9 degrees of expansion. Twelfth test—precipitated silver. After five hours the pointer showed one-half of one degree shrinkage. Next morning it showed 8 degrees expansion. After twenty-four hours the pointer showed 20 degrees of expansion.

Doctor Bogue's paper did not contain a statement of the analysis of each alloy tested. Therefore, we are uninformed in regard to eight of the alloys named in his list of experiments. However, a review of the Doctor's statement of results obtained by the use of his measuring instrument, we find a report of shrinkage in nine of the amalgams. The three exceptions are, first, copper, which gave neither expansion nor shrinkage. Second, precipitated palladium, which gave 9 degrees expansion. Third, precipitated silver, yielding 20 degrees of expansion in twenty-four hours.

A second point worthy of some notice, as seen in Dr. Bogue's paper, is the variation in the amount of shrinkage discovered in each one of the nine contracting amalgams, the greatest contraction being 16 degrees, the least, 2 degrees. The record of shrinkage, as given in eight of the nine, in point of time, appears to have been limited to twenty-four hours or thereabouts, and some of them to a shorter period. Had all been subjected to the test of a week or more, as was Johnston's & Lunds extra alloy, which in a little more than a week, showed a shrinkage of 16 degrees, perhaps the report, in a majority of the cases, would have been somewhat different.

Perhaps parties interested may claim that these measurements by Drs. Hitchcock and Bogue, were with alloys made use of in a former period in the history of dental amalgams; and therefore they should not be placed on the same plane or basis of merits with those in use at the present day. In order to give a brief presentation of facts in this connection, I will quote from sources of information dated 1885, ten years subsequent to the date of Hitchcock and Bogue's papers. I received a list containing the names of forty-nine dental alloys, known to be in the market in 1885. Accompanying the list was a statement giving the quantitative analysis of each of the alloys, which I supposed was a near approximation to the facts in each case. In looking over this statement I discovered that the largest per centage of silver contained in any one of the list of forty and nine, was accredited to Townsend's improved alloy, viz., forty-eight per cent. The one containing the lowest proportion of silver was named Grimes's front tooth alloy, viz., ten per cent. Twenty-two of the forty-nine were said to contain a fraction of gold; fourteen, a fraction of platinum; nine, a fraction of zinc; six, a fraction of copper; three, a fraction of antimony, and one a large per centage of cadmium. According to the stated analysis of each, the average of silver in the list, was less than in Dr. Hitchcock's list of 1875. This clearly demonstrates to my mind that in material points, the amalgam alloys of 1885 differ in their composition but little from those in use in 1875. And the little difference that is shown to exist, detracts from instead of adds to the physical property called non-contraction in dental amalgams.

On a recent occasion, when turning over the leaves of the third volume of the *American System of Dentistry*, I observed, on page 813, under the heading "Dental Metallurgy," a table, showing the composition, by analysis, of sixty-five dental amalgam alloys. [Was it an error or not, that a list or table of the characters therein given, was permitted to appear in that valuable work?] That table teaches only that A, B and C's amalgam alloy is composed of this, and of that, and other constituent metals. Taken as a standard or unit in compounding alloys, it is somewhat mystifying. For instance, the formula of constituent metals therein given of Flagg's facing alloy, is as follows, viz.: tin, 35 parts; silver, 37 parts; gold 5 parts; and zinc, 3 parts. These several parts when summed as a whole, amount to 80. This number (80) is the unit of the formula of metals composing this alloy. In the same table is given the analysis of Professor Essig's alloy, the unit of which is 105. Also is given the analysis of Chase's plastic tin alloy, the unit of which is 107. Also Chase's coppered alloy, the unit of which is 115. With several other exceptions of less degree, the unit of the remainder of said table is 100.

When comparing the composition, or integral parts, of one of those alloys with that of others, the names of which are given in the same table, the comparison becomes a sort of mystification, in consequence of the absence of uniformity in the standard or unit, that should govern in the compounding of dental amalgam alloys. Nevertheless, the table shows a tendency towards improvement in some of the amalgam alloys of 1887, in so far as shrinkage is concerned. For instance: It is shown there that Flagg's submarine amalgam alloy, contains sixty parts of silver in the one hundred. This increase in the per centage of silver, tends toward prevention of contraction in amalgams prepared from such alloy. If Dr. Flagg had made use of a further increase of silver to the extent of fifteen or twenty per cent., thereby displacing an equal amount of the tin, the amalgam produced by the use of such alloy, would be up to the standard of non-contraction.

One important fact made prominent by the experiments of Drs. Hitchcock and Bogue, preceded and supplemented as they are by other experimentalists in the same line of discovery, is as follows, viz.: Pure silver in combination with mercury sufficient to form a plastic amalgam, is not in that relation, a contracting metal when undergoing the process of crystallization, but on the contrary is expansive in its tendencies. Consequently, those evils which result from contraction in dental amalgams, can be overcome by the use of a sufficient amount of silver to accomplish that purpose.

When I review the numerous quotations I have here presented, and take into consideration certain manifest results, which I think are legitimately derived therefrom, and add thereto my own experience in testing and proving the presence or absence of contraction or expansion, in amalgams of my own production, also many of those produced by other parties, I am thereby forced to the following position and conclusion, viz.: To succeed in producing a non-contracting dental amalgam, less subject to discoloration than many do in use, that will not creep out or protrude from its position in a properly formed cavity, retaining in fair condition the corners and edges of fillings composed of such amalgam, it becomes necessary that the manufacturer should make use of the following combination or formula of constituent metals, the standard or unit thereof being fixed at one hundred, viz.: Eighty parts silver, fifteen parts tin, three parts platinum, and two parts zinc. The employment of a large per centage of pure silver prevents contraction. The employment of a small per centage of platinum and zinc, in a good degree renders much aid in preventing discoloration of fillings. The small per centage of zinc named will not in any case develop galvanic influences to an extent that will be objectionable. An alloy produced in conformity with this formula or with but slight variation from it, will result in producing a quick setting amalgam, a quality that will render some aid in preventing a globular conformation of the mass composing a filling.

Furthermore, be it known to all who may read this article, that in presenting the quotations, thoughts, reflections and conclusions therein given, I am not advocating the employment of amalgams in operations for the preservation of teeth, as an article par cexcellent and superior to gold or other good material. Amalgam is but a second class material in dental operations. Nevertheless, when dental practitioners consent to the use of a second class material, I regard it as being only right and just, both to themselves and their patrons, that they use the best of a second class material that can be procured.

COMBINATION FILLINGS.

BY DR. L. PRENTISS.

The combination of tin and gold as a filling material has of late been brought into deserved prominence, and, with your kind permission, I will endeavor to suggest a few points that may be of benefit to those who have had little or no experience in working this combined material, or soft gold, or tin, alone. The method of working tin and gold differs materially from that employed in the use of cohesive foil. No retaining pits or grooves are necessary, but the cavity must be so shaped with gradual undercuts and solid borders as to permit the filling material to be packed solidly against the walls and retained there, as I shall endeavor to describe.

No one rule is applicable to all classes of cavities, but the general principles are so similar that with a little modification, depending upon the cavity to be filled, they will be found to apply in most cases.

In the use of tin and gold as a filling material the dentist should exercise judgment in determining when and when not to use it, for it should not be used indiscriminately. For instance, on account of the material turning a dark gray or black, after insertion, it is not advisable to use it entire in the anterior teeth. Again it does not furnish as hard and resistable a masticating surface as either cohesive gold or the amalgams.

Gold and tin are usually employed in the form of ropes or cylinders. A sheet of No. 4 tin foil is laid upon a sheet of No. 4 gold, usually non-cohesive, and this cut into two or three strips according to the size of the cavity to be filled, and each strip rolled into a rope, but not too tightly. By cutting the tin foil smaller than the gold, when the two are rolled together the gold will form the outside of the rope. This is merely a matter of choice, however, as there is a great similarity in the working qualities of the two metals. If the rope is to be used and the cavity one of simple form, begin the filling by seizing the rope near its end, with the pliers, and carrying it into the cavity letting the end project a little above the borders. Hold the gold in this position with an instrument of some kind and grasping the rope far enough down to form a loop so that the end may project, as before stated, carry it also into the cavity, forcing it against the posterior wall. It should be borne in mind that in using this material it should be packed against the sides of the cavity rather than built up from the bottom of it. Thus one loop after another is made in this way until the cavity becomes about half full, when it may in the same manner be condensed against the anterior and other walls until there is but a small hole left in the center of the filling, which is filled with pellets or cylinders of this material. After thoroughly condensing in all directions with suitable instruments, the projecting portions of the tin and gold are then forced into the mass and burnished down. The filling is finished in the usual way, care being taken to burnish well toward the borders rather than from them. The tin and gold may be used in the form of cylinders, if preferred, letting each project from the cavity, and condensed in the same manner as before described. The combination is easy to work and will stay just where it is placed, thus making a more perfect filling than any of the other metals.

Where the cavity is on the proximal side of the tooth or is a compound cavity, the operator's judgment must guide him as to the shaping of the cavity and the insertion of the material. It is sometimes policy to build out the filling with cohesive gold. The cavity is filled about two-thirds full with tin and gold and then cohesive gold is used. The first pieces of the cohesive gold should be united by deeply serrated pluggers, as no cohesion will exist between the ordinary non-cohesive and cohesive golds. After a firm attachment of the first pieces, the cohesive gold may be built on in the usual manner until the filling is completed. Cohesive gold is sometimes used in combination with the tin foil but inserted without annealing the gold, and the last third of the cavity filled with cohesive gold alone.

The use of the matrix is often unsatisfactory when using this combined material in the ordinary way unless due care is taken. It is best to use the band matrix if possible, and fasten the first pieces of the material between the edge of the matrix and the cervical wall, as described by Dr. Brophy, thus insuring a good covering for the cervical border and a good retainer for the starting of the filling. When the matrix is used, the filling may be nicely inserted by the Herbst method using a sheet of No. 4 tin foil and two sheets of No. 4 of the so-called soft, cohesive foil, building up the last third of the filling with cohesive gold alone. Some difficulty may at first be experienced in properly manipulating this combination material, but subsequent trials will demonstrate its value, especially as a covering for cervical borders in proximal cavities where the wall is broken away high up on the tooth.

CONGESTION.

BY GALEN, XENIA, OHIO.

(*Continued from page* 27.)

We now come to consider *passive congestion.* This is very different from the conditions that have been described in our former article on this subject, described in part in the January number of the Journal. It is different in origin, character, and indications of cure.

The blood is neither attracted nor forced into the vessels of the part, but accumulates in them because it is not carried forward quite so rapidly, as it moves with the ordinary movement of the circulation.

The reason for this impediment arises from two distinct causes or sources, first, from a want of a due degree of action which is necessary to its transmission, that is, depression, or from some physical difficulty or obstruction.

The depression, giving rise to congestion, may be general or confined to a particular part or organ. We often have this condition of affairs in diseases which are attended with great and sudden prostration.

The heart, partaking of the prostration, is unable to transmit the blood so rapidly, as it is conveyed to it by the continued action of the extreme vessels, and by the forces which move the blood in the veins.

This fluid, therefore, accumulates in the right side of the heart and the great venous branches; and hence in the organs with which these trunks or branches communicate, viz., the brain, liver, and through the latter to the abdominal viscera in general. Instances from this cause of congestion occur daily.

A blow upon the head or any severe shock temporarily paralyzing the cerebral action, certain mental emotions which tend to produce syncope, the chill of fevers, especially those of a typhoid, or typhus, or malignant character, and the prostration of violent intestinal spasm, all bring about internal congestion as the result of depresent heart action.

It is not necessary to describe the violent symptoms which attend these affections, for they are known to every practitioner and serve as guide-boards to point to the real cause or origin of the disease.

Yet we have a collapse of the nervous system and feeble movements of the heart, which are due sometimes to other causes than congestion.

Congestion often arises from local depression affecting the minute vessels of a part.

From causes that operate directly or indirectly upon these vessels which have been noticed under the head of depressions, they become unable to perform their duties in sustaining the onward movement of the blood, which, therefore, accumulates in the vessels behind them, especially when the vessels carry venous blood.

Thus when the capilliaries of the lungs become depressed, the venous blood, carried to the right side of the heart and thence into the pulmonary arteries, accumulates in the ramifications of these vessels, distending their trunks, loading the right ventricle, and thus producing venous engorgement of the heart and lungs. The same thing occurs in the liver. A depression of the minute circulation in this organ, leads to accumulation in the whole portal system of veins, not alone in its hepatic ramifications, but in the vessels and radicles which convey the venous blood from the abdominal viscera to the vena portæ. Hence, we have arising from this source congestions of the stomach, bowels, spleen and liver.

Depression in the capilliaries of a secreting organ may also promote congestion by diminishing secretion. The part of the blood usually thrown out by the secretory process remains in the vessels and produces a greater fullness than in the ordinary state. The same result would follow spasm of the minute vessels of the lungs or liver, which is supposed to occur when the centers of the sympathetic nerve are irritated.

After inflammation, the minute vessels are frequently left in an enlarged and relaxed condition, which admits the entrance of blood by means of the *vis a tergo* in greater quantities than in the healthy state and thus produces congestion. Here we have an example of passive congestion which may be removed by means of remedies which produce contraction of the vessels.

This is illustrated by the blood-shot appearance of the conjunctiva, which is wholly devoid of symptoms of inflammatory excitement.

Congestion from purely physical causes is often seen. It now and then is produced in a small degree by force of gravitation. The blood accumulates in the vessels of a dependent part, even in health, by too long a continuance in one posture. But in cases of debility where the vital action is weakened, and the opposing physical force is in the ascendency, congestion is more common and does not yield to remedial agents readily.

We generally find this form of congestion in the lower extremities, but it is observed in the posterior portion of the body in persons who from weakness are compelled to be long on their backs.

It is sometimes observed in the lower portions of the lungs, this is known by some writers as *hypostatic congestion.*

When the blood in its course toward the heart is obstructed, and accumulation in the vessels takes place, when the heart is organically defective, then we have passive congestion.

Sometimes these passive congestions are the cause of danger if of too long continuance. There is a sense of weight, fullness, or oppression accompanying them, but no heat; the redness is a purplish or black hue. Sometimes the sensibility is diminished. The serum of the blood often escapes and produces œdema, or dropsy of the cellular tissue and serous cavities.

Hemorrhage of a passive character is sometimes seen, the blood seeming to percolate through the parietes of vessels, which are in a debilitated condition.

All functional action is impeded and deranged, so much so that in some cases fatal disorganization takes place. It becomes a nice point to determine how much of this trouble may be ascribed to congestion and how much to the provoking cause. At any rate, we will be safe in addressing our remedies to the abstraction of blood and the removal of the physical cause upon which the congestion depends.

There are instances in which positive irritation causes passive congestion, when the blood accumulates in vessels which retain their healthy excitability and are stimulated into excessive action. In congestion of the portal system of veins dependent upon the depressed condition of the capillary circulation of the liver, we find that the venous circulation in the intestinal mucous membrane, shows in the congestion, and the arterial vessels become loaded, and irritation, if not congestion, takes place. Nature relieves herself by a profuse secretion, and diarrhœa is the result.

CHEAP DENTISTS.

BY HARVEY M. KIRK, D.D.S., COLUMBUS, O.

There is a species of opposition existing in many of our cities at present, especially to young practitioners; and that is, the establishment in those cities of so-called Albany dentists, Buffalo dentists, New York dentists, etc. The leading feature of these dentists is, not that they bring any special virtue extracted from these cities which they claim to represent; their chief and only distinguishing trait is, the advertising of dental work at astonishingly low prices,—keeping up with the advancement of the times —as they claim.

Not infrequently, the next issue is the reduction of prices to about the same notch as those advertised by the new comers, by one or more of the older dentists. All this makes it very discouraging, in the outset, to the young dental practitioner who may have only recently located; especially those who look on their profession as one of high standard, and who desire to rise to an elevated plane of eminence and ability in their profession; but who find themselves confronted, it seems to them, with one of the two alternatives, either to compete with (to say the least) these unprofessional practitioners, or fail.

The advertising of cheap prices is certainly unprofessional. If they are graduates of reputable colleges, as many of them are, they have been obliged to sign the Code of Ethics of the American Dental Association, requiring them, among other things, to refrain from resorting to any such means of acquiring patronage, as unprofessional.

We are writing for the encouragement of young, intelligent dentists, starting under such adverse circumstances.

True it is, that if a dentist is worthy, and his work meritorious, he is sure to have success, without having to resort to any doubtful means to acquire it. He will have to exercise patience; he will have to be industrious; every business, and especially professional, requires these virtues.

In our profession, it is mostly our time and skill, for which we ask our patients to pay us a fair price. But those dentists, even though they may be able to do first class work, (which is doubtful), are not going to give the same quality of work, (requiring the expenditure of the same amount of time and skill, as a reputable dentist would give,) for one-half the price. This is a fact, self-evident.

Some people like to be humbugged. Those persons, who would rather trust their cases to such a class of dentists, let them go; for they are an order of less intelligent patients, and a class for which we have little hankering. As reputable and intelligent dentists, it is our desire to draw reputable and intelligent patronage about us, capable of appreciating skill developed and exercised in our particular direction.

Let us again assure you, that if you are worthy of success, with the exercise of a degree of patience and industry, you are bound to succeed, and that handsomely, too. And remember, also, that the many who may and do patronize these "Cheap Johns," are a class which you do not want, and besides, that they pay dearly, after all, for what they get.

REPORT OF CASES IN ORTHODONTIA.

BY EDWARD H. ANGLE, D.D.S., MINNEAPOLIS.

In former numbers of this Journal I gave the main principles of my system for correcting irregularities. I now propose to report from time to time cases in practice, illustrating more fully the application of the principles of this system. For convenience in reference the cases will be numbered.

Case No. 1.—That of a young lady, American, aged 18 years, by profession a stenographer—health and development good—features regular and face attractive, aside from the dental irregularities. When she came to me for consultation I found her teeth almost faultless in shape, color and structure; she possessed the full complement for a lady of her age and the irregularities were confined to the superior oral teeth; the lower arch being shapely, the teeth even and regular, with occlusion good. It will be seen by referring to Fig. 1 that the canine is badly inlocked and considerably turned on its axis. A space of $\frac{1}{8}$ inch also exists between the central incisors, the right central and lateral are pushed backward in the line of the arch, occupying one-half the space designed for the canine. The lateral is also somewhat

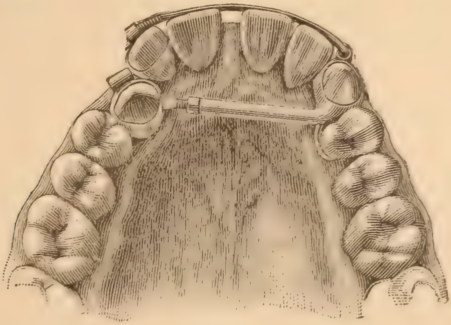

Fig. 1.

turned upon its axis. The irregularities are hereditary, her father having irregularities somewhat similar, her sister also having a space between the centrals, though not quite so much.

Treatment: We have here three movements to be accomplished. First, the central and lateral are to be moved forward in the line of the arch until the space is closed. Second, the canine is to be moved outward into the line of the arch, and Third, the canine and lateral are to be rotated. These movements were accomplished in the following manner: A careful impression was taken and a model made for future reference. The rubber dam was applied over all the teeth back to the second bicuspids. The inlocked canine was banded and piped, the pipe being soldered to the labial surface on a line at a right angle with the axis of the tooth—a slot was formed in the palatine side of the band and the band was then cemented in position on the tooth. The canine on the other side of the arch was banded. The base of the pipe of the screw, for pushing, was soldered to this band on the palatine surface. A spur was also soldered to the base of this pipe designed to rest against the first bicuspid, giving additional resistance. The screw was slipped into the pipe, the flat end inserted into the slot previously formed in the band encircling the canine to be moved and all cemented in position as shown in Fig. 1. The second movement was accomplished at the same time by banding and piping the lateral incisor, the pipe being soldered on the labial surface on the band at a right angle with its axis, the band was then cemented in position, the threaded end of the traction screw was slipped through this pipe and the nut applied. The other end was sprung around and the angle of the screw hooked into a pipe previously soldered to the band encircling the anchor canine as shown in Fig. 1. In order to give the traction screw more spring in rotating the lateral, it was beaten flat and polished in the region of the centrals. This also makes it more pleasant to the wearer. Both nuts were now tightened with a small wrench, it will be seen that the anchorage is very secure, as the two screws directly antagonize at this point, the patient being an intelligent one, was given the wrench with instructions to tighten the nuts twice a day. I saw her occasionally and noted the progress; at the end of eleven days the central and lateral had moved forward, closing the space between the centrals, by reason of the spring in the traction screw acting upon the lateral, it had been rotated and occupied proper position in the arch. During this time the canine had also been pushed into line and only required rotation, which was accomplished by means of the spring lever applied in the usual manner described in a former article, the end of the lever being applied in the pipe previously soldered to the labial side of the band. As the tooth was now so loosely confined in the alveolus, rotation was easily accomplished in two or three days, after which the teeth were retained by passing a piece of plated wire through the pipes on the central and canine as shown in Fig. 2.

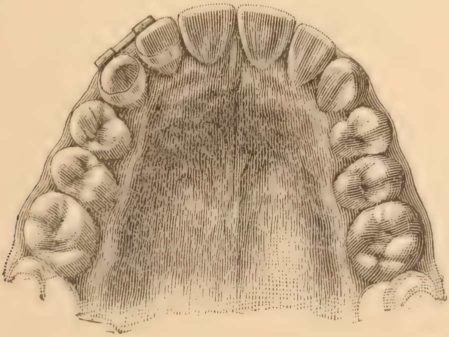

FIG. 2.

The improvement in the appearance of the teeth of this young lady needs no comment. I will only add that the inconvenience of wearing the apparatus was hardly noticeable and although the movements were accomplished in so short a time, the pressure being *without relinquishment, there was no pain.*

FAITH.

BY W. IRVING THAYER, D.D.S., M.D., BROOKLYN, N. Y.

[From a paper read before the First District Dental Society of the State of New York.]

IT'S not always the fault of the dentist that teeth go to destruction, and, stop not in all their going.

But, his sins are many. Sins of ignorance, born of conceit, fostered by laziness, and nursed by stupidity!

A shambling way of getting over difficulties, instead of taking things as they are and making them what they should be.

Faith in his own abilities, whereby he over-rates his solid accomplishments. Faith without works will keep neither from falling into the ditch.

Faith is a process of believing, unto which is attached as an adjunct, hope!

Therefore, I would say unto my soul, "hope then in the future!" "Pray without ceasing," which means, do everything you can for the elevation and best interests of your chosen profession.

"Salute the brethren!" Salute them by placing before them any little device you may have, or plan of procedure in any given thing or direction, to the intent, that, when they shall have imbibed your self-discovered points, they shall swell out into a rotundity of usefulness that shall make your very soul leap for joy!

I know a man, lo! these twenty years, who has been actuated by just such a spirit, who has sometimes gone up high in a balloon, inflated with solid wisdom, who has been throwing out his grappling irons, letting down his rope ladders, and, by deftly throwing out his wires of love, "heated, one seven times more than it was wont to be heated," has entangled many a brother, and as a result we see here to-night what we could not have seen twenty-five years ago, and you are ready with me now to put your hands upon his whitened locks and reverentially pronounce your blessing!

Such things has faith done for your profession, and can it fail to receive your benediction?

There are scores of just such men as I have portrayed all over this country; and I can count many of them in much less than a day's journey from where I stand. To say that they are beloved on more than two continents would be to put it mildly.

What an incentive to you young men to climb up higher! Faith in your brethren! Faith in yourselves!

If the writer has been enabled to gain even the lowest round of that mighty and lofty ladder that stretches so far above him, he has been enabled to gain that humble position by the inspiring faith that radiates, as does the magnetic current from the central energy so richly diffused around him. Faith! inspiring faith.

Faith is the mother of invention much more than is necessity. Necessity limits to deliverance from a given plight.

Faith looks up to God-given possibilities. Constantly seeking in her expectant belief that the very type of perfection is within her grasp.

Necessity did not conceive and labor to bring forth the electric mallet. Faith saw what was possible in perfection coupled to time, and she too conceived and brought forth "good tidings of great joy," that have been accepted by many a wise man, and many a permanent, valuable and lasting operation has been born of faith and her hand maiden, works!

Talk not of grief where faith holds court. The two are incompatible.

Faith loves to work. Faith holds on. Faith is inspiring. Faith is the sweetest of incentives to delightfully goad a man up to her sublime possibilities.

Faith is from God. Hence, God like!

Faith discovered a way to swage up a gold crown so as to crown such a magnificient contour, so life-like in form, so useful in beauty.

Faith conceived and brought forth all porcelain bridge-work! Faith formulated heroic chisels! Cut out moose-hide periods! Robbed narrow approximating surfaces of their exclusiveness by polishing them with silver strips! Faith depressed dams, while it elevated their inventor!

Faith will yet prove implantation to be a failure with rare exceptions.

Faith made a Morrison! Then he turned round and made the dental engine! Faith caused Coffer Dam Barnum to bless his profession! Everybody loves his hallowed memory. His faith took him home.

Allen's faith made him a baker. He began his baking in eighteen hundred and forty-eight, and he has been a continuous baker ever since. Has in very fact baked his blessings into hundreds of patient's mouths, at a temperature of over three thousand degrees Fahrenheit. Not a cool faith, that!

Faith has moved many a dental mountain.

Faith, not pride, gave birth to that grand organization, The First District Dental Society of the State of New York, and all other dental societies throughout the world.

It was not, nor is it now, vain ambition that keeps the fires aglow, warm and bright on these altars of love and progressive fraternity.

It is faith that you have, Mr. President, and you, gentlemen of the First District Dental Society, faith! I say that you have in each other and in those around you who are not members of your distinguished body, faith! blessed faith!

What prompts this society to maintain such valuable clinics as they have done for years, the wonder of an admiring dental world? Is it because each member digs gold thereby and fate sifts it into his worthy pockets? Is it because any member thereof is after the dross of vain ambition, gilded with perdition and stained with contempt and envy? No! Bless God, no!

But it is faith that has opened your eyes and enabled you to see, that by all your sacrifices, your toils, your labors, you have down deep, beyond all minor considerations, that earnest desire to do something to bless and benefit your fellow men; while sweeping blessings are poured like holy oil upon your own worthy heads.

Why have you heretofore sought out for minds rich in thought, to submit their experience at your evening meetings? Did not your glowing faith teach you to believe? Yea! better yet, know that these bright lights would shed their effulgence into your own waiting souls?

They came! You saw! Both conquered. What a love feast. Who has been injured?

Time would fail me to speak of all the useful inventions and appliances that faith and hope have brought forth to smooth the rough paths in dentistry, and make the lot of the patient a much more comfortable one.

Faith and the microscope! Faith and reagents!

I must speak now of teachers. Men who devote considerable time to teaching in our colleges, are doing great things in educating new men, so that they will be fairly capable to assume the intricate duties of dentistry. Teach no error! Know of a surety that what you do teach is the exact thing and the very best method. This applies with equal force to all teachers who do not occupy a chair in any dental college.

If you be but an unpretentious operator at a clinic, or allow a brother dentist at your operating chair in your office, what you have to offer him let its color be of the purest water. "Freely ye have received, freely give!"

I claim that men who are teaching, in whatever sphere, are worthy of all respect, provided they are honest and teach what they conceive to be the truth, solely and on account of the faith that is within them of doing good.

Will you have the kindness to allow me to make one statement, and not misjudge me and say "it is all flattery," when I say unto you with all the earnestness of sure conviction, and because my soul believes 'tis true, that you are doing a great work for dentistry, and what you do for dentistry you are doing for every human being in the world who has to do with the dentist. Did you ever think of this? Isn't this plain and the absolute truth? Will you call this a wild fantasy, when I say paradise can't be far off for such men?

But what I say of you is not the whole truth, for all over this land there are men engaged in this same blessed work, teaching, educating, praying and imparting knowledge to other men who are to follow after.

What better epitaph could do service to a man's memory than that he did good, not as his duty, but according to his opportunity?

Opportunities come fast and are always worthy of careful attention. The opportunity may be nothing more than a cheering word or look of recognition to an earnest but unfortunate brother. Still it is an opportunity.

When speaking of the developments in dentistry and the different inventions brought out, do not understand your speaker to be blind to the fact that there was no necessity for all these things. There was a great necessity, but it was reserved for faith to exercise the faculty to conceive these results ere necessity could give birth to the thought of certain needs.

It is a sad fact that not one person in two hundred the civilized world over, attends to his teeth as he ought to, and at the time he ought to. Neglect and procrastination is the rule with few exceptions. "Oh! to-morrow will do. My teeth are composed of bone, and they won't decay much in two or three months. If they do I can have the nerve killed."

Gentlemen, I wish I had intelligence enough to suggest some sure way to educate people up to the great importance—to them—of early and frequent attention to their invaluable teeth. My faith comes in here and says it can be done! and I have found said faith reliable.

I know a plan tried by a man who conceived the idea that he might do something to educate the people in dentistry and give them such facts and information as should benefit them in no small degree, and at the same time he eliminated everything from the pages of a little book that he published, that could in any way reflect on any really competent dentist, while at the same time it would cause the reader to frequently consult his own dentist, and promptly attend to the salvation of his teeth. I believe that that little book has done great good, not only to those who read it, but to the dentist who was the chosen operator of any such reader.

My faith tells me that the people can be educated up to the importance of early and frequent attention to their teeth. And this society has it within its power to create a popular and valuable craze — if you will permit such a homely expression — of accomplishing such a result.

There is no question of the great need of popular information for the general public. They are not alive to their needs, and the dental profession, as a whole, are very much to blame, because they do not teach as far as they can and enforce dental hygiene. How can people hear without a teacher? Let each dentist come up to the full measure of duty to his patients, and then the whole profession combined cannot cover one-tenth, no, nor one-twentieth of the ground.

Short, attractive monographs or tracts should be circulated broadcast, day in, day out, year in and year out, till the very babes will comprehend the value and importance of their teeth!

I will close by stating that I have faith to believe one thing more. I could talk for fourteen hours on this subject and not exhaust it. I do believe that the day will come when no man will deliberately kill an exposed pulp! Then, at that time, he will as soon think of destroying the whole tract of the fifth pair of nerves as a live pulp.

Call me a dogmatist, if you please, I care not for it, for this opinion of mine has been in the throes of labor for upwards of thirty years, and few are the cases where I could feel myself justified in deliberately destroying a living pulp. I will make no exception, even in cases of prominent pulpitis, for even then, the cases are numerous where one can save that pulp alive.

I do not make these bold statements on the spur of a moment or by guess-work. I can only now state them in all soberness and truth. That is my faith!

A line of procedure in this direction is too long to weary your patience with to-night. My statements are bold, yet they are of the truth and truth cannot be finally crushed.

My faith in gentlemen who will and do attend clinics and dental meetings is almost unbounded. They are the educated men. They are infinitely wiser and better professional men for so doing, for they get so full and running over with professional efficiency that their patients are blessed with every movement they make.

Correspondence.

"I charge you that this epistle be read."

JOURNALISTIC COURTESY.

To the Editor of the Ohio Journal of Dental Science—*Dear Sir:*—The editor of *Items of Interest*, in its February issue, insists that he gives proper credit in quoting from a discussion, if he appends the speaker's name and omits that of the journal publishing the report. He is all wrong and must have something the matter with his vision that he can't see it. If you employ and pay some one to attend a meeting and make a special report for the Journal, that report is an original article in your journal, and if quoted by another, you should have credit for it just as for any other matter original in the Journal.

Reporter.

Compilations.

"Gather up the Fragments."

PORCELAIN FILLINGS ON THE VISIBLE SURFACES OF TEETH.

BY A. H. THOMPSON, D.D.S., TOPEKA, KAS.

Gold fillings upon the exposed and visible surfaces of the teeth—the incisors and canines especially—are very unsightly, and cause much regret to sensitive persons. Anything that will avoid such a misfortune will be a boon to many who are thus afflicted. On running over our list of filling materials, we find nothing that looks any better, for most of them look worse, than gold. The only material offering any chance of imitation of the natural enamel, is porcelain, for we constantly employ it for matching the natural teeth with good success. Therefore it is the only material with which we can hope to match the enamel in our efforts to fill anterior—visible cavities—with a desire to conceal our art.

The method of accomplishing this, however, is difficult, and we have yet much to overcome before we can arrive at perfection in its performance. The operation offers a promising field for the experimenter and the inventor, for he who can make it simple and practicable will be a benefactor. For the present, our methods are very crude, but yet often answer a good purpose in avoiding gold and preserving the tooth. One way is, in a cavity on the labial face of an incisor, for instance, where wholly surrounded by enamel, to cut a groove all around the margin and carefully square the edges; then select the porcelain from the broken artificial teeth box, having regard to the change in the shade that the cement which you propose using, will produce. Shaded cements are necessary in this work, as the ultimate color of the porcelain depends as much upon the shade of the cement as upon that of the porcelain. So the coloring must be managed by both together. The polished face of an artificial tooth, which matches the natural enamel, would of course be best, but as it is impossible to preserve this polish through the finishing process, and the porcelain can be polished afterwards, this is not essential. The artificial tooth is chipped and a suitable piece selected. This piece is ground down nearly to the depth of the cavity, the grinding being done from the tooth-body side that the enamel portion may remain. It is then fitted in the cavity and beveled around the edges. Then the proper color of cement is placed in the cavity and the porcelain pressed carefully into it. If it is to be filled around with gold, it will be necessary to move the porcelain until the narrow fissure is exact in width on all sides. After setting, the cement is cut out of the fissure and this is very carefully filled with gold, taking care to avoid cracking the edges of the porcelain. After finishing, this leaves a ring of gold on the face of the tooth like inlaid work on a Cloisonné vase. A closely fitted porcelain, set in cement alone, makes a more artistic operation as to effect, but is open to the objection that in some mouths the cement does not last well, but with the improvement in the lasting qualities of the cements, with proper management, this will not long be a valid objection. The color must be watched closely and the effect studied in various lights and angles. After the cement is well set, the porcelain is carefully cut down with fine stones and polished with pumice and buckhorn or cuttle fish. A carious stained spot on the edge of the incisors is best managed by cutting into it from the edge and making a groove around the three sides, into which the porcelain is fitted closely with a magnifier, and the porcelain is slid into the dovetail when cemented in. It must be dressed off well at the edge to avoid strain and accident.

Another excellent method of employing porcelain is in filling the cavities upon the necks of the incisors or canines, above the enamel where the gum has receded. Gold fillings in these locations are very unsightly. A fine effect is produced by filling these cavities with pieces ground from the porcelain red gum of artificial teeth, which reproduces the natural gum appearance very well. The piece should be fitted with great nicety, and be allowed to project in a rounded form above the edges of the cavity. When these cavities form an extended crescent shape, it is necessary to make two pieces of the porcelain. Small crescents can be ground in one piece with care, but they will usually break.

We hope these suggestions will bring others from our readers, that some light may be thrown upon this much desired but difficult operation.—*Western Dental Journal.*

THE PUPIL AS A GUIDE IN THE ADMINISTRATION OF CHLOROFORM.

It is always difficult to determine the exact moment in which a patient is sufficiently under the influence of chloroform for an operation to be proceeded with. The sign of conjunctival reflex action, which is usually relied upon, is very variable and often misleading. Mr. Henry J. Nelson formulates the following conclusions as a guide in this respect (*British Medical Journal*):

1. The effect produced by chloroform on the pupil is at first

dilatation, varying in degree and duration, then contraction as the narcosis becomes profound, and dilatation again when the sensibility is returning. If the administration be still continued, with the pupil strongly contracted and motionless, the pupil will also dilate, but in this case more suddenly and completely, and will be coincident with a state from which it will be difficult or impossible to resuscitate the patient. This latter is the dilatation of asphyxia.

2. So long as the pupil dilates in response to excitation by pinching, etc., the patient is not sufficiently narcotized for the operation to be proceeded with, unless the latter is slight and does not require complete anæsthesia.

3. When the pupil becomes strongly contracted and immobile, no more chloroform should be given until it begins to dilate again. If, then, further anæsthesia be required, a little more chloroform should be given till the pupil again contracts.

4. The occurrence of sickness causes dilatation similar to, but more sudden than, that which happens when sensibility is returning, and the efforts of vomiting have the effect of arousing the patient.

The watching of the respiration and the pulse, which are doubtless the best indications of the effect produced on the individual by chloroform, and, therefore, of vital importance for safe administration, does not in many cases furnish evidence of the state of sensibility, in regard to which he holds the observation of the pupil to be of greatest assistance. The sign usually relied on, namely, the insensibility of the conjunctiva, is by no means a satisfactory test, for in many cases conjunctival anæsthesia is established long before the patient can be said to be under the influence of the drug. By observing the pupil, the administrator of chloroform can tell at once when the effect of the drug is on the wane, because the pupil then begins to dilate slowly. Noticing this, he can, by the administration of a few drops more chloroform till the pupil contracts again, prevent the occurrence of struggling and interruption of the operation. In this way he can keep the patient in the state most suitable for the satisfactory performance of the operation without narcotizing him more than is necessary. The amount of chloroform required to maintain a state of anæsthesia is much less than that required to put a patient under its influence several times, and as it is admittedly a dangerous drug, the less administered the better, especially in operations of long duration. And by allowing the patient partially to recover, one runs the risk of the occurrence of sickness and vomiting, which is always an awkward, and often a dangerous accident. In the absence of such a guide as the observation of the pupil, the chloroform is likely to be given in a rather haphazard way, dosing the patient till narcosis is profound, perhaps too much so, then interrupting the operation till the danger is averted by arousing him, or waiting until signs of feeling, such as struggles or a cry of pain, give indication for more chloroform.

The observation of the pupil also furnishes a fair indication of the effect produced by chloroform, its size bearing a constant relation to the state of the blood pressure. In the experiments on dogs the blood pressure in the carotid artery was recorded on charts, and it was found that contraction occurred only when the pressure had fallen considerably, and, on removal of the chloroform, dilatation took place only when the pressure had risen to a certain height. As reduction of the blood pressure was pronounced by the committee of the British Medical Association to be one of the chief dangers in chloroform administration, the presence of a sign by which the occurrence of that important condition can be recognized must be of practical value.—*The American Medical Digest.*

RACHITIS

Is frequently the result of protracted intestinal disorders. Therefore proper feeding is an absolute necessity. Animal food must predominate, but meat ought to be lean. The so-called erethic disposition requires less meat, but more of the better class of farinaceous foods,—viz., barley and oat-meal, and boiled milk, and salt. The same indications are valid for all the conditions subsumed under the head of scrofula. Coarse bread, acidulated food, fruit not absolutely ripe, must be avoided.* The introduction of phosphates, in whatever shape is a mistake, for the following reasons:

In the careful experiments of Foster, who fed infants on milk, it was found that the mineral constituents were absorbed least (still less than fat). Of the ashes of milk in general, there were in the fæces 36.5 per cent.; of the calcium in particular, seventy-five per cent. In spite of that the baby throve, and increased in weight in one week one hundred and seventy grammes. Thus there appears to be but very little need of salts on the part of the growing baby. The infant of two and a half years receives in one day 1.25 grammes of calcium, of which there is an elimination of 0.92 gramme in the fæces and 0.03 in the urine. There is then a balance of 0.3 gramme in a day, of 2.1 in a week, of a kilogramme, or two pounds of calcium in a year. This is all that is utilized.

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* Loose bowels behave well under the influence of acorn coffee (containing gallic acid), or acorn cocoa, as introduced into practice by Michaelis, of Berlin.

Almost the entire quantity of calcium in the body is deposited in the bones, which contain eleven per cent. of calcium in the adult, and in the infant and child somewhat less.

There are some very important practical points connected with the results of these observations.

As long as the food contains plenty of calcium and phosphoric acid there is certainly no indication for the introduction of the same in the form of medicine, or as an addition to food, for the purpose of improving nutrition. Thus the *combination of cod-liver oil with phosphate of lime*, which has become so fashionable, is *based upon an illusion* concerning its alledged efficiency. Besides, the empirical observation has been made also, at a very early time, that immediately after the administration of preparations of calcium there was increased elimination through both the fæces and the urine.

Thus, as there is no actual absence of calcium phosphate in the food, the organism should be spared useless labor. In occasional cases, where the effect appears to be favorable, this very effect is different from what was intended. When rachitical or anæmic infants are supplied with phosphate of lime, and iron, bismuth, etc., they are generally patients who are suffering from primary or secondary catarrh of the stomach, with superabundance of acid in its secretion. In these very cases the calcium phosphate acts as an antacid, inasmuch as phosphoric acid becomes free and the lime neutralizes the acids of the digestive organs.—Jacobi: *Therapeutics of Infancy and Childhood.—Archives of Pediatrics.*

Editor's Specials.

"Write the Vision and make it plain."

WHICH?

Clearness of decision and then prompt action will show to advantage in any active department of life. The man who has inherited worldly wealth, and has settled down to clipping coupons as his sole occupation, may take his time, waste a part of it, and even clip with dull scissors, and yet get through the world in his state of half-hybernation, and leave something to spoil his children.

But such a life will not do for the practical man, certainly not for the dentist. As he can practice but a very few years at best, he cannot afford to waste time by careless or indifferent thought, nor by the use of defective or unsystemized instruments.

Let us theorize on the special duties of a dentist established in a good practice in an intelligent community. Before he can answer the question "which," he must be familiar with the answer to what? What are the teeth? What their texture? What their composition? What their connections and attachments to other tissues? What their vital force, and its source? What their reflex influences? What about them and their entire environment?

Then, are the teeth and surroundings healthy? If not, by what steps and processes did they reach their morbid condition? Can they be made to retrace these? Or is there another possible route to health? If so, then comes "which?"

Now the dentist ought to decide promptly what changes he wishes to bring about, and by what means. If by instrumental means, which instrument? The best, of course, but which and where? If by medicines, which? And why?

If all this is true, it means that the dentist must "have his wits about him." It will waste precious time if he has to study out correct answers to these several questions as they arise.

And it is very important that the correct answer is given in each case, for if the answer be incorrect, the resulting action will be on the same basis.

Our profession, and the medical too, incline too much after recipes. Take, for example the use of elixir vitriol as an application to the necrosed margins of the alveolar processes. Many apply it without a knowledge of what it is, or how it acts. They use it because it is used by others in whom they have confidence. The active agent in this compound is sulphuric acid. And the dilute sulphuric acid of the dispensatory has the same strength. The aromatics in the former have little if any effect. Now, if you wish only to corrode the surface of diseased bony tissue, and thus stimulate vital parts beneath to increased action, the sulphuric acid preparations are good. This acid acts but little on bone phosphate, while it decomposes the carbonate of lime, leaving a layer of insoluble sulphate of lime, and this shuts off action so that the influence is necessarily superficial. And very often that is just what you want.

But, if you wish to dissolve the necrosed portion, dilute hydrochloric acid is better. With the carbonate of lime, it yields chloride of calcium, one of the most soluble salts known. And it is the reliable solvent of bone phosphate, and hence the lime salts are soon taken away. And while doing its solvent duties it also acts as an antiseptic, as one of our contributors lately told you. A part of the antisepsis is probably due to the formation of chloride of calcium.

These two agents are here used merely to illustrate the importance of clearly understanding exactly what you desire to do. We should so educate and train ourselves that promptness of thought, and corresponding action should become perfectly natural. Hesitancy generally means failure.

ABSTRACTS WITH COMMENTS.

TEETH IN INHERITED SYPHILIS.

Mr. J. Hutchinson, Jr., at a recent meeting of the Harveian Society, showed patients and drawings illustrating the malformation of the teeth in inherited syphilis. The chief points discovered by Mr. Hutchinson, Sr., were recapitulated and the fallacy of looking for characteristic signs in the temporary teeth pointed out. Those teeth which in after life showed syphilitic deformity in the greatest degree were those which calcified first, and which during the year lay the nearest to the gum surface—namely, the permanent incisors and first molars. The three small projections seen in normal teeth at the cutting edge of the central incisors were noticed, and the wearing away or non-development of the median one was described in connection with the formation of the semi-lunar notch and the narrow cutting edge. The horizon erosion of enamel from mercurial stomatitis in infancy and its occasional coincidence with true syphilitic malformation were illustrated, and stress laid on the fact that the upper central incisors were the real test teeth of inherited syphilis, though in many cases all the teeth were normal.—*Lancet and Clinic.*

This is a brief and clear statement. We hope it may aid some of our brethren whose minds are reaching out in this direction. In going up hill the best walkers take short steps. The hill of science is most successfully climbed on the same general principles. Our own mind has not been turned in this direction as it might have been had our practice been mainly in large cities.

THE PREPARATION OF ANTISEPTIC SPONGES.

The *Vereinsblatt Pfalzischer Aerzte* states that in the antiseptic process, sponges of medium porosity are the most easily treated, those in which the pores are too fine being freed with difficulty from sand and shell lime. They are well dried by heat, and are freed from coarse sand by being beaten with canes, being then placed upon a coarse hair-sieve, and washed until the water runs off absolutely clear and free from sediment. The sponges are then subjected to the action of a solution of permanganate of potash (1 in 1000) for about two hours, and enough crude muriatic acid is added to cause the violet color to entirely disappear. By repeated washing with water the sponges are purified still further, until the water used in washing no longer reddens blue litmus paper. They are then well dried and placed in a solution of sublimate (1 in 1000), where they are left 10 or 12 hours. By occasional washing with distilled water the solution of chloride of mercury is removed, and the sponges are then dried in a room free from dust (or, preferably, in a drying press), until no loss in weight takes place. For preserving the sponges metal vessels or wide-necked glass receptacles closing tightly are indispensable.—*Lancet.*

This, from the *Lancet* we found in the *Pacific Record.* The directions are plain and minute, and are in full accord with the laws of chemical action. As sponge grafting is already a recognized factor in oral surgery, we feel that our brethren should know what they are doing, and how to do it. Of course many of them understand already; but "line upon line" is a recognized law in mental progress. It is told of John Wesley that he impatiently rebuked his wife by saying "Why do you tell that stupid boy the same thing, over and over, for twenty times?" Her mild reply was, "He seemed to not have quite a clear understanding of it, and I had to tell him *once* more or lose my *nineteen*." The man with professional thoughts so clear and deep that they were incapable of improvement, died before this JOURNAL started; and we can't give you his name—to say nothing of his portrait—for his grave is unmarked, and his family record is lost.

But remember that sponge grafting and its kindred devices, have not yet reached their full measure of usefulness, either in general or special surgery. Carry your knowledge of these and your thoughts on other points, to the utmost limits of useful application. Let theory and practice go together. What the mind suggests as useful and good, let the hands put into execution. Of course this implies clear thinking, and trained hands. There is seldom, if ever, an excuse for rashness, but often a call for courage and boldness.

REMEDY FOR NEURALGIA.

DR. JOHN T. METCALF, in *Boston Med. and Surg. Jour.*—The following formula was learned from a patient sent to Cuba, with the hope that a change of climate would afford relief from sciatica. A French physician who there attended him, used this remedy with the best results: equal parts of the tinctures of aconite root, colchicum seeds, belladonna, and actea racemosa. Six drops to be taken every six hours until relief is felt. "As an internal remedy it is worth all others put together, of which I have knowledge."

Dr. Metcalf is good authority; and it is probable that dental surgeons see about as much neuralgia as general practitioners. Any light at all on this fearful subject ought to be welcome. Many complain of neuralgia when kind hearted sensitive nerves are simply suggesting proper care of the health; yet such know almost nothing of neuralgia. We have seen brave, strong men crying, like children, with facial neuralgia. We have known neuralgic pain, limited to a space of less than a line square, so severe as to cause profound and prolonged syncope. General neuralgia has been so severe that a deep local burn was not noticed, and apparently added nothing to the agony.

But there is a phenomenon in some conditions of neuralgia not often, if at all, described in the text books. The victims describe it as involving the entire body. It feels as if a very *large*, and a very *heavy* distress. And while very sharp local neuralgia may accompany it, the feeling is that it is altogether distinct from any local trouble. The victim feels as if greatly enlarged, yet quite too small to contain the pain, which seems to fill the room which he occupies to a high degree of compactness. He instinctively wishes the walls were pushed outward, to lessen the pressure of the pain by giving it more room. These phenomena are sometimes, but not generally, accompanied by paroxysms of angina pectoris.

But this condition is beyond the range of our use of language. To do it justice would require words "which it is not lawful for a man to utter;" and the victim can not always tell whether he is "in the body, or out of the body."

Yet all this and more may arise—have arisen—from dental disturbance, hence, if we could, we'd tell dentists about it. We recall several such cases in our own practice. Two that we think of were ladies over thirty years of age. One had been shut in a dark room more than three years, the other about two. Both had received constant medical attendance, with but little relief, and that only temporary. Both were promptly restored to good health after their mouths were put in healthy conditions. But a diseased mouth is not the only cause of such agony.

Sometimes in neuralgia, especially if prolonged, the nerves of motion are affected, and twitchings, and even clonic spasms occur. In this condition we have found nothing else equal to nitroglycerine. Use a one per cent. solution, and begin with one drop, swallowed with an ounce or two of water. Repeat the dose in a half hour if necessary, and so the third dose. Some patients require larger doses; but an overdose causes a very unpleasant headache. The proper dose relieves the twitchings or convulsions in a very few minutes, and to some extent relieves the pain at a later period. This medicine often gives relief in paroxysms of spasmodic asthma, or in angina pectoris.

If the patient suffers from that feeling of pressure and enlargement described above, relief may be sometimes gained by the use of antipyrine, in doses of twelve to fifteen grains, not over three times a day. This for an adult. Reduce in proportion for children. We have found acetanilid quite as efficient in one very severe case. It is much cheaper and should be taken in smaller doses. Three to six grains are enough for an adult; and not over thirty grains should be taken in twenty-four hours. This dissolves with difficulty in cold water. It is more soluble if alcohol is added, and, from its composition, we infer that a little acetic acid added to the water would complete the solution.

REST FOR THE WEARY.

Amylene hydrate is the latest hypnotic. It is a liquid, clear, colorless, slightly lighter than water, miscible in all proportions in alcohol, and in eight parts of water. It has a distinct penetrating odor. Its average dose according to Von Mehring is about one drachm. In power it is midway between chloral and paraldehyde. It scarcely affects the pulse or respiration, but simply quiets the cerebrum. If any pain be present it is unreliable.—*American Lancet.*

We have no experience in the use of this medicine. We advise the reader to find out the symptoms of an unquiet cerebrum, and he will be able to know when this remedy is needed. The dentist meets with much to unquiet his cerebrum. May be this will be good for him, as well as for the patient he has tortured all afternoon.

Is it not a reasonable conclusion that if a dentist has a cerebrum, he ought, in the language of the mortal Ingersoll, "to know enough to know" to not be a dentist?

When the cerebrum needs quieting, the patient is usually wakeful, without knowing why. He lies in bed and thinks, and thinks, gets tired, and still thinks.

The bacteriology of malaria has for many years occupied the attention of pathologists. In 1879 Crudeli, in conjunction with Prof. Klebs, published observations which tended to show that in malarious districts a bacillus inhabits the soil.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

THE February, 1888, number of the *Dental Review*, contains the following editorial:

"FIAT JUSTITIA."

"In a recent number of the REVIEW, we called the attention of our contemporaries to the injustice of publishing clippings, without crediting them to their proper source; and, at the same time, mentioned the fact that the *British Journal of Dental Science* had published three clippings from the REVIEW, as editorial matter of its own. In recent numbers of the *Ohio State Journal*, our friend Bethel has made use of those same clippings, and given credit for them to the *British Journal*. If our friend would read the REVIEW a little more closely, he need not be three months behind the times in circulating useful knowledge, or lay himself open to criticism for negligence. We deem this subject—the giving of proper credit to exchanges—of much importance, as injustice is often done by the ruthless confiscation of the fruits of the labor of others."

The Doctor says: In recent numbers of the *Ohio State Journal*. Perhaps he refers to the OHIO JOURNAL. If so, we would suggest that if *he* would read the JOURNAL a little more closely he need not be *one year and three months* behind the times, or lay *himself* open to criticism for heedlessness.

We will say that we do read the *Review* and all the other dental publications as well, and when we clip from the various journals we endeavor to give proper credit. We have generally relied upon the honesty of the editor from whose journal we clip, and though we might have seen a formulated statement three months previous, we would be apt to be thrown off our guard when we observed the same in another publication where no credit was given, and especially as the article appeared as editorial.

Perhaps the *Review* man thinks we ought to recognize at sight any sayings that come from Chicago, America; perhaps our readers mistrusted that these were of western origin, but for fear the impression has not been indelibly made, we refer them to the three line brief in October number, page 495 of the OHIO

JOURNAL, and also to one of four lines on page 496. These are supposed to have been original with the *Dental Review*, and our readers will please make the proper credit with pen and ink as it is now rather too late to have this number of the JOURNAL reprinted.

We are sorry that seven lines of the 1887 volume of *The Review* have gone astray and have not been properly identified; but the editor ought to feel thankful that, after even *three month's* time, they found their way into such a real live and largely circulated dental publication as THE OHIO JOURNAL.

The closing sentence of the editorial we will not dwell long upon, but refer the reader to the *Dental Review*, page 638, where he can see how credits should be *properly* given. Here we find an article that commences thus: "Those who are in the habit of indulging in raw onions, *says a medical exchange*, [italics ours] may be—etc. Certainly no (?) injustice in such a credit.

CONSPICUOUS FILLINGS.—DR. WILLIAM ST. GEORGE ELLIOTT says: Contouring the front teeth, unless of a very partial character, I do not advise. The gold is too conspicuous. Do not let your ambition run away with your judgment. Contour work is very easy at this part, and from a technical point of view we all admire it, but our art should be conspicuous in hiding itself. If a tooth is badly broken I prefer to cut it off and pivot or crown it rather than to use gold. If not badly broken away, and yet very conspicuous, I would advise white cement or gutta-percha.—*Dental Record.*

SNUFF FOR NASAL CATARRH.—Rabow recommends the following powder for nasal catarrh:

℞ Menthol pulv - - - 3 grains.
Coffæ rostæ - - -
Saach. alb - - - - of each 50 grains.
Fiat pulv.

To be used like ordinary snuff.—*Pac. Rec. Med. and Phar.*

TEETHING. IS IT A COMMON CAUSE OF DISORDER?—RUSSELL. (*Albany Medical Annals.*) In the author's opinion teething may occasionally cause some disturbance, but it is the exception and not the rule. He thinks if a disease is to be considered as a consequence of teething, it must not simply now and then coincide with the cutting of a tooth, but the coincidence should be exact as to time, and repeated, if not with every tooth, at least frequently. As our knowledge of the causes of disease in children has increased, the importance of teething as a cause has decreased. The chief difficulty arises from ascribing to teething, disorders due to other causes.—*Archives of Pediatrics.*

METHOD OF APPLYING ARSENIC.—DR. J. A. ROBINSON says: Arsenic will not cause pain when combined with carbolic acid if there be no pressure upon the exposed pulp. If applied in heroic doses it is a caustic, but in infinitesimal amounts and combined with carbolic acid it is a sedative. It assuages pain immediately, and it subdues inflammation. It is the pressure on the inflamed pulp that causes the pain brought on by bungling application. I never put anything like gutta-percha over the application, but lay cotton gently over the opening to the pulp, and sometimes tie a thread about it to hold it in place. I use pure carbolic acid to paralyze the pulp while the arsenic devitalizes it.—*Ind. Prac.*

Closure of Lesions of the Palate.—Dr. Wm. N. Morrison says: In the application of Surgery for the closure of lesions of the palate, I want to claim originality for the following method, which is to dissect, from the nasal side of one side of the cleft, a flap a quarter of an inch or more in width (taking periosteal layer where bone is to be reproduced) to the end of the uvula, dividing the curtain in the center. Then from the palatine surface of the other side of the cleft, dissect a similar flap; now bring the raw surfaces together and secure with stitches, making the nasal surface of one flap the palatine, and the palatine of the other the nasal, having only two lines of incision to heal, one nasal and one palatine, and a complete mucous membrane on both surfaces, and economizing all tissue, which, in such cases, is always wanting.—*Archives of Dentistry.*

A Pleasant Anæsthetic Mixture.—Dr. W. J. Stephens says: I should like to place before your readers an anæsthetic mixture, which I think will be found to give great satisfaction, especially for all minor operations, namely, a mixture of equal parts of alcohol and chloroform. I have administered it (using a Skinner's inhaler) in minor surgical operations and in dental cases, and have found no unpleasant after effects whatever, except in one case in which there was slight excitement, which very soon passed off. A more pleasant mixture can be made with equal parts eau de cologne and chloroform, and in addition the inhaler should first be sprinkled with a few drops of pure eau de cologne, so as to render the first two or three inhalations still more pleasant and comforting to the patient. In dental operations I have found this plan most satisfactory for nervous ladies, who are prejudiced against any form of anæsthetic other than gas.—*British Med. Journal.*

Arsenical Applications.—Dr. James Truman says that arsenical applications should be carefully covered with gutta-percha. In case any arsenic touches the gum I would apply magnesia or ferric-hydrate or dialyzed iron immediately to the part affected. It is well known that it has been impossible to divitalize with arsenic, a pulp in a highly inflamed condition, without excessive pain to the patient. This fact has been one of the serious objections to the use of arsenic, and has had probably more to do with the adoption of capping than anything else. Dr. Kirk has partially succeeded in such cases by combining cocaine with arsenic, but the uncertainty of the action of this agent in connection with the pulp renders it impossible to depend on it. I have been for sometime experimenting in the same direction, and have had most satisfactory results in the use of iodoform in small quantities in connection with arsenic. In all cases so far tried there has not been a particle of pain in acute pulpitis.—*Dental Cosmos.*

The Use of Heavy Gold for Filling.—Dr. E. G. Betty says: I will say that No. 60 is the weight best evidencing the requisite qualities of gold as a filling material, together with ease of manipulation in the introduction of the filling. It enables the operator to introduce the maximum amount of material with the minimum of space occupied in the introduction, a point you will all readily appreciate. The welding property in the cold state is best manifested when the amount of material in use at one time is sufficiently thick to withstand the percussion of the mallet, the serrations of the plugger being unable to cut through and consequently comminute the layers as they are welded together. The fewer the surfaces brought together in a mass such as a filling is, the stronger will be the cohesion of that mass by reason of there being fewer parts to divide the strain. That is a principle in mechanics that is well appreciated by the builder, the boiler-maker, and many others that might be mentioned. In the wear and tear of a filling in the mouth, especially those operations we denominate "contour," heavy foil will stand longer and better with little or no tendency to chip or granulate. This is conceded by those who use pellets almost exclusively, they almost invariably advocating the "covering" of a filling of light numbers with a few layers of heavy foil.—*Dental Register.*

Amalgam.—Method of Insertion.—Dr. W. G. A. Bonwill gives his method of inserting amalgam fillings, as follows: Imagine the superior cuspid decayed on its distal surface, with the first and second bicuspids on the anterior, distal, and grinding surfaces gone so far as to leave nothing standing but the buccal and palatal walls; and to this add yet the first molar with its anterior wall, crown, and distal surfaces as seriously involved. To fill such with gold would require the time of several sittings; but with amalgam the whole of it can be done in a short time at one sitting, and, unless the gums are weeping, without the rubber-dam. This latter is always in order if applicable at all. You commence to fill at any one point. Should the separation be wide, then gutta-percha should be used as a matrix on one side only; or a roll or wad of bibulous paper will do; or spunk or the napkin. Where the fingers can hold a piece on both sides, so much the better. I know of no steel matrix I would use, as true contour is not so possible, and you take extra risk in dislodging the alloy in removing the matrix. Besides, it is not practicable to have a matrix that will cover all these spaces from the cuspid to the first molar.

As soon as the first piece of alloy is inserted a wad of bibulous paper as large as the cavity is placed thereon, and an oval-pointed steel instrument is pressed upon it with great force to crowd out the super-abundant mercury. Go on adding alloy and more paper until the cavities are crowded full from cuspid to molar, leaving no intervening spaces. Direct pressure is not as efficacious as rubbing the amalgam in with a burnisher over the paper, which drives the mercury out at all points. No rough-faced instrument should be used; smooth burnishers and oval-faced only, as the same principle as in rubbing in gold by the action of the mechanical mallet. When you have reached nearly the proper fullness, use the flatter burnishers entirely, not only to add the alloy, but to be sure the mercury is carried to the edges. To do this you must not lose a moment; and the alloy should not have too much gold in it, or you cannot undertake so much at one sitting. By the time you have gotten all the cavities full, you must commence at once to divide between each and contour. It will be found that when the opposite teeth are made to antagonize with it, great care should be used to keep from dislodging any portion of this large mass; therefore, before the division on the proximal surfaces is made, see that the articulation is absolutely correct. Then, with a broach with small point turned, scratch away all the cervix until the tool reaches from both buccal and palatal surfaces, and the divisions are clear to nearly all the grinding surface. Now, with a very thin knife or saw you can carefully divide the fillings to make each tooth distinct. In this proceeding great care must be exerted or the contour will be broken. When this has been done, shape with proper instruments, leaving all the grinding surface in contact as broadly as possible, so that, when the teeth go back again to their positions from which the gutta-percha had moved them, the food cannot wedge down between them. Where cavities are obscure on proximal surfaces, get the alloy as nearly in place as you can, and a wad of paper will be sure to force it down. Besides those cases with more or less walls for support, in those where much of the cusps of either wall is gone the alloy can be added and compressed easily and surely. Entire or partial crowns can be secured in a few minutes. Be sure that the alloy is not allowed to remain projecting over the free margin of the contour before the patient leaves. Then but little dressing of the contour is necessary when the operations are filed and finished.—*Dental Cosmos.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Indiana State Dental Society holds its next annual meeting at Terre Haute, Tuesday, June 26, 1888.

Illinois State Dental Society at Cairo, Tuesday, May 8, 1888.

Iowa State Dental Society at Iowa City, Tuesday, May 1, 1888.

Kansas State Dental Association at Topeka, Tuesday, April 24, 1888.

Michigan State Dental Association at Ann Arbor, Tuesday, March 27, 1888.

Mad River Dental Society at Dayton, O., Tuesday, May 19, 1888.

Nebraska State Dental Society at Beatrice, Tuesday, May 15, 1888.

Northern Ohio Dental Association at Painesville, Tuesday, May 8, 1888.

Mississippi Valley Dental Society at Cincinnati, Wednesday, March 7, 1888.

INDIANA DENTAL COLLEGE.

The commencement exercises of the Indiana Dental College will be held on Wednesday, March 7th, in Plymouth Church, Indianapolis, 7.30 P. M.

Dr. Wm. H. Atkinson, of New York, will be present and deliver the annual address. A cordial invitation is extended to the dental profession of Indiana and surrounding States to attend, as a rich intellectual and musical treat is promised.

Yours very truly,

J. E. Cravens, *Sec'y.*

ALABAMA DENTAL ASSOCIATION.

The next meeting of the Alabama Dental Association will be held at Selma, Alabama, on Tuesday, April 11, 1888, and continue four days. All dentists are cordially invited to be present.

T. M. Allen, D.D.S., *Sec'y,*
Birmingham, Ala.

Books and Pamphlets.

ANATOMY, DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.S. Drawings by H. V. Carter, M.D., with additional drawings in later editions. Edited by T. Pickering Pick. A new American, from the eleventh English edition. Thoroughly revised and re-edited, with additions by William W. Keen, M.D. To which is added LANDMARKS, MEDICAL AND SURGICAL. By Luther Holden, F.R.C.S. Pp. 1064. Philadelphia: Lea Brothers & Company. 1887.

Our readers will need no explanation of what this work contains, further than a notice of the revised portions and new additions, as there is probably no book so universally used as Gray's Anatomy. In examining the work we notice that in all, about one hundred pages have been added and one hundred and thirteen new engravings. All portions of the book have undergone thorough revision to conform with the advancement in descriptive and surgical anatomy. To give the reader a more concise idea of the work as it now appears, we quote from the preface: "The whole of the work has undergone a careful revision; many clerical errors and errors in point of detail have been corrected. In the section on Osteology, an endeavor has been made to give more accurately the time for the appearance of the several centres of ossification of the bones, though this is a point on which anatomists differ, and which probably varies in different cases. In the section on Arthrology the movement or movements permitted in each joint have been carefully revised, and the muscles by which these movements are effected have been given. In the section on Myology the action of each muscle or group of muscles has been carefully considered, and many alterations and corrections made. The other parts of the work, and especially that devoted to Microscopic Anatomy, have been carefully revised, and some alterations in arrangement and detail have been introduced.

The whole of the arteries, veins, and nerves in the wood cuts have been colored. In the section on Osteology, the dotted lines showing the attachment of muscles have also been colored." In the preface to this new American edition Dr. Keen says: "In the section on the brain I have rejected the English cuts showing the sulci and convolutions, and substituted the the more accurate and generally adopted plates of Ecker. The text was correspondingly inaccurate, and could not be adapted to the new illustrations without a few changes, which, it is hoped, will facilitate the study of this difficult part of anatomy. I have also carefully described the Cerebral Circulation, and have added a section on Cerebral Localization and Topography—subjects of great and increasing importance, especially in view of the recent strides in Cerebral Surgery. Among the new illustrations are many of obvious utility, such as a series of sections through important joints; a series of frozen sections through the trunk, the extremities, and the female pelvis; cuts representing the histology of various tissues; the shoulder and pelvic girdles; the interior of the nose and larynx; the development and occlusion of the teeth and the absorption of the alveolar processes; the structure of the muscles; a series giving the points of application of electricity to the muscles; a series on the circulation of the brain and spinal cord; another series to illustrate cerebral localization and topography; another on the cutaneous distribution of the nerves; a number of cuts to elucidate the anatomy of the cerebrum; two showing the sympathetic nerve; and others illustrating the peritoneum, etc. Wherever practicable, colors have been introduced to distinguish the veins, arteries, and nerves, so that in the colored edition the American additions shall be in harmony with this novel feature of the latest English original. There is scarcely a section of the work, therefore, which has not been extensively enriched in the matter of illustrations.' The coloring of all arteries, veins, and nerves, greatly facilitates the study of these important tissues, as one can comprehend from a glance, the true relation they bear to one another and to the surrounding parts.

DENTAL METALLURGY. A Manual for the use of Students and Practitioners. By Chas. J. Essig, M.D., D.D.S., Prof. of Mechanical Dentistry and Metallurgy in the Dental Department of the University of Pennsylvania. Second edition, revised. Pp. 258. Price $1.75. Philadelphia: S. S. White Dental Mfg. Co. 1888.

This work has been carefully revised to conform to the latest results of experimental research. A number of pages have been added and the more recent improvements in the reduction of metals and the formation of alloys and amalgams used in dentistry have been incorporated. The different chapters treat of the Metallic Elements, Properties of Metals, Alloys, Amalgams, Modes of Melting Metals, Combinations of Metals with Non Metallic Elements, followed by thirteen chapters in which are described the different metals in common use, their properties, compounds, alloys, etc., closing with a chapter on Electro-Metallurgy. It is a reliable work and has been well received.

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT. By EUGENE S. TALBOT, M.D., D.D.S., Chicago, with 152 illustrations. Cloth; 163 pages. $2. Philadelphia: P. Blakiston, Son & Co.

This is undoubtedly, for the busy practitioner, the most practical work on the subject and such a one has long been wanted. He can here find just what he wants without having to wade through an interminable number of cases and obsolete methods. The author well says: "No pretense has been made to cyclopædic fulness, inasmuch as it is believed that practicableness and conciseness in a scientific work are preferred by the profession to verbosity and minuteness of detail," and again, "Each subject is considered in the order in which it would naturally present itself to the mind of the operator while the patient is before him, this clinical character being deemed by far the best for a work of this kind." Not many of us can afford to undertake the correction of cases of extensive irregularities of the teeth, but we should all be posted in the best methods to enable us to undertake simple cases or refer complicated ones to specialists."

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES. Fourth annual session, Washington, D. C., September, 1887.

This pamphlet is of interest to both student and practitioner. It gives the rules and recommendations of the association, its constitution and a list of the membership to January 1, 1888, the latter now numbering the representatives of twenty-four schools.

VICK'S FLORAL GUIDE.—In the way of Catalogue, Vick's Floral Guide is unequaled in artistic appearance, and the edition of each year that appears simply perfect, is surpassed the next. New and beautiful engravings, and three colored plates of flowers, vegetables, and grain, are features for the issue for 1888. Its lavender tinted cover, with orginal designs of most pleasing effects, will ensure it a prominent place in the household and library. It is in itself a treatise on horticulture, and is adapted to the wants of all who are interested in the garden or house plants. It describes the rarest flowers and the choicest vegetables. If you want to know anything about the garden, see Vick's Floral Guide, price only 10 cents, including a Certificate good for 10 cents worth of seeds. Published by James Vick, Seedsman, Rochester, N.Y.

THE PRACTICAL DENTIST is the name of a projected dental journal to be published March 1st, at fifty cents a year by C. W. MUNSON, D.D.S., Toledo, editor and publisher of *The People's Dental Journal.*

The Combination of Metals for Filling Teeth, by Dr. C. T. Stockwell, Springfield, Mass. A timely monograph reprinted from *The Dental Cosmos* for December, 1887.

Transactions of the American Dental Association. 27th annual meeting, Niagara Falls, N. Y., August, 1887. Cloth, 174 pages. Philadelphia: The S. S. White Dental Manufacturing Co.

Illustrations of the Articulations of the Tongue, by Norman W. Kingsley, New York, with 39 figures, is a part (pages 225 to 248 inclusive) of The International Journal of the Universal Science of Language. It is based on Dr. Kingsley's Chapter on The Mechanism of The Formation of Vowels and Consonants in his work on Oral Deformities.

Our Aftermath.

Married.—At Springfield, Ohio, February 16th, Dr. C. R. Converse and Miss Estelle Grant Taylor.

"Misfit" and Second-Hand Teeth.—A firm of dentists in London advertise that they will purchase old sets of artificial teeth.

Dr. Melancthon Stout, of Chicago, is one of three commissioners appointed to organize The Aquarium and Fish Market Company of Chicago.

Anonymous Communications go into the waste basket. To insure insertion, articles must be accompanied by the name of the writer, not for publication, but as a guarantee of good faith.

Post-Graduate Schools.—The fact that more than 1200 practitioners of medicine have taken courses at the New York Polyclinic since its opening in November, 1882, is proof that in this country, at least, post-graduate schools meet a want.

How He Feels.—Hypochondriac: "I am feeling very blue this morning." Doctor: "What's the matter?" "Every time I feel my nose it hurts me." "But you are not obliged to feel your nose." "But how can I tell whether it hurts unless I feel it?"—*From the German.*

The Irrepressible Conflict between "Sissero" and "Kickero" has broken out afresh. It is desirable that the pronunciation of Latin be as nearly uniform as possible among scholars in all parts of the world. The tendency is towards the so-called Roman method. If his fellow Romans called Cicero Kickero, we might as well humor them and him in the matter, especially as we willingly hazard tongue dislocation by attempting to follow the foreign pronunciation of modern European proper names.—*Washington Star.*

Concerning Women.—Mme. Sollier, a beautiful mulatto woman, the wife of a (French) Bicêtre professor, has passed her examinations, and been received as a Doctor of the Paris Faculty. A treatise of hers on "The State of Dentition in Idiotic and Deformed Children" is highly commended.

Miss C. Elbe has passed a successful examination in dentistry in Sweden.

Death of Mrs. J. H. Paine.—Mrs. Priscilla Miller Paine, wife of Dr. J. H. Paine, of Middletown, Ohio, died Saturday, December 31, 1887, of typhoid pneumonia.

Pliny the younger relates that Marcus Curius, nick-named *Dentatus*, had all his teeth at birth. Richard III. did the same, and Jacobi reported a case of a Spanish dwarf, who was born with all his teeth, all of which remained; he had a beard at seven years of age, and became a father at ten. A woman named Mary Wood, æt. 98, had nine new molars at that age, and a certain Scotch farmer lost all his teeth at sixty years of age, and six months later he cut a new set without the aid of a dentist, and had them all when he died at ninety-six of age.—*Medical Press.*

What is a Homeopathic Dose?—In a recent Stoke-Gabriel case, Mr. Wallace said that he gave his medicines in "homeopathic" doses. "M. D." now writes to the *Western Morning News* to say that there is no such thing as a homeopathic dose. The term "homeopathic," he says, denotes a principle of drug administration—not a small dose of any given drug. "Further," he continues, "homeopathy does not countenance the employment of secret remedies, nor does it recognize the right of other than legally qualified persons to practice as physicians or surgeons."

Bad Prognosis.—"Prisoner, have you anything to say why the sentence of death should not be passed upon you?" "A few words, your Honor. I am thirty years of age." "Well?" "Your older brother is a physician." "This is impertinent and irrelevant." "It may sound so, your Honor, but it means life or death to me. I understand that you take a great pride in the phenomenal success of your brother?" "I do, but what possible bearing can that have upon your case?" "Simply this: Your brother, the doctor, examined me, a year ago, and predicted that I would live at least thirty years. It would certainly undermine his reputation as a scientist should I die before that time."—*Med. Register.*

It is Not Nice.—Every now and then some English writer suddenly discovers that we Americans are accustomed to something which would shock society in London or Paris. The better classes in this country, as well as some who make no pretensions, are *quite agreed that it is not the thing to make an exhibition of one's self with a toothpick*, but that any one should start affrighted at a modest use of the harmless thing is a surprise to people who can and do appear to proper advantage. In the good old days we use to have toothpicks made of quills, and some of the folks who could take you to the very spot where blue blood was handed down did not hesitate to use the quill modestly, even at the table.—*Clubman in Chicago Mail.*

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

A LESSON IN TIN.

BY HENRY BARNES, D.D.S., CLEVELAND, O.

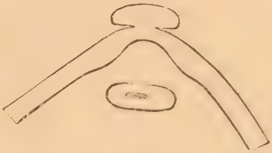

FIG. 1.

THE little device here shown has been used by me for about one year, and has been found of such practical benefit that I am persuaded to illustrate it for the benefit of the profession generally.

Take taggers' tin, 34 to 36, according to the case, English gauge, cut it into shape like Fig. 1, now turn down the lip and bend the tin so as to pass between the teeth, and when in position take a pair of flat-nosed pliers to bring the two ends together, now take the little oval-shaped washer (made of German silver with a punch and scissors) slip it over the two ends, bend them back, also bending the washer around the cutting edge of the tooth, which will support the clamp in position. Now with an instrument push the clamp up against the gum as far as is necessary as in Fig. 2.

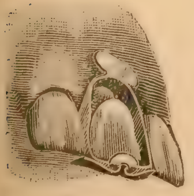

FIG. 2.

This will support the dam and keep the gum from forcing itself into the cavity; the cavity may be prepared and the filling thoroughly finished before the clamp is removed, thus doing away with the laceration of the gums so common in such cases.

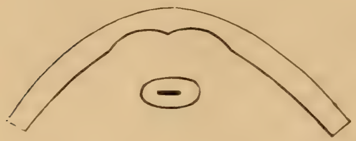

FIG. 3.

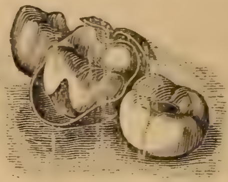

FIG. 4.

Figures 3 and 4 are fastened in about the same manner, and will be found very helpful in cervical cavities in the molars. One advantage possessed by the clamp, is that it may be pressed into almost any desired shape, thus adapting itself to a large range of complicated cases. German silver or any other soft metal may be used. Gutta-percha or modeling compound may be used to secure in cases which have no supporting teeth.

PRESIDENT'S ADDRESS.*

W. N. MORRISON, D.D.S., ST. LOUIS, MO.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

Gentlemen of the Mississippi Valley Dental Association:

It affords me great pleasure to be with you on the forty-fourth anniversary of this grand old society, and being your second best man, I must ask your generous indulgence for all short comings and your hearty support and assistance to make this meeting equal to its predecessors—then my highest ambition will be gratified. I will not detain you long as your committee has arranged an admirable programme which will occupy all your time profitably when fully carried out.

Let us have the least politics possible. Our papers and speeches should be short and concise. The day for long winded productions is past; life is too short to sit through them or read them; we must have things in telegramic proportions if we wish them to be read or remembered. Let us have centrifugal machine articles and speeches in societies which give us the cream without taking so much blue milk. While the scientific investigation of the cause of decay of the teeth goes on, we should not sit as idle lookers on till the question is decided. We know that the mouths kept cleanest require the least of our skill, and be the destruction caused by chemical, vegetable or animal agents, singly or combined, clean mouths are not favorable for their action. Beautiful fillings and artistic restorations are intrusted to uneducated patients who, stimulated by an excavator, will promise to do anything exacted while in the dental chair—they go out and neglect their duty and return reluctantly when forced to come, bringing the information for our special benefit, that fillings do not preserve the teeth from decay.

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* In the absence of the President, A. W. Harlan, W. N. Morrison, Vice-President, delivered the annual address.

Dentists are daily committing the error of not instructing their patients in regard to the proper methods of cleansing their mouths,—brushing, picking, rinsing with warm water after meals and at night before going to bed. Our observations must show that people who do those things faithfully, have little or no dentistry to do. It is astonishing what ignorance exists among people of all classes and conditions, as to what cleanliness of the mouth means. They will tell you frankly that they do not brush their mouths as well as they ought to, for they did not know they were going to be examined and when you looked, *you really thought so*, and the second thought was *probab'y not for a month.* Cleanly habits are part of an individual's education and can be formed only in childhood. Too much care cannot be bestowed upon the subject for the little ones. Each individual must see it thoroughly done — have it done for him and experience having it well rubbed in with a brush. Not much dentrifice of any kind is needed—small quill tooth picks are best, narrow strips of rubber dam for spaces the quill will not clean. Water used frequently for rinsing, with a motion of the tongue upon all the surfaces of the teeth and gums, lingual, palatal, labial and buccal. So much for preventive dentistry which should be our highest aim.

Render every thing to its most useful and healthy condition in the shape of a tooth or root,—keep an occluding tooth to every tooth. After extracting a tooth or root through mistaken judgment, restore the lost part and be enough ashamed of the operation to acknowledge it and replant or transplant another in its place. Leave deciduous teeth in the arch to the last moment for their use in mastication, to fill up the arch and that they may contribute their own substance to build up the new osseous structures—the crowns acting as caps over the new crowns. Irregularities are not so frequent where these teeth are allowed to remain; make space with wedges between the teeth in crowded arches of growing children to prevent decay.

Tropical fruits, particularly those of the citrous family, are showing their effects on the teeth. The Americans as a people are extremists and carry everything to excess, as is well shown by their diet. Lemon and hot water in the morning, lemon with your fish or steak for breakfast. For dinner, lemon with your oysters on the shell, lemon in your soups, lemon with many other dishes that follow, lemon cooked up with eggs and sugar, custards and pies, and lemon in the finger-bowl. Lemonade and often a plain lemon straight; and when a little out of sorts, a hot lemonade at night on going to bed.

Sweets constitute such an important part of our diet. Children are bribed to do plain duties, by promises of more sweetmeats. Drinks which would have been sickeningly sweet to a palate of years ago, are daily demanded by children of our day. Syrups to excess are used daily in all families. Milk and eggs are ruined in their healthful simplicity by the addition of sugar and lemons; and other mixtures are made that deprive the teeth of use in mastication and furnish the secretions of an abnormal quality favoring destruction by decay.

I have watched with much interest and sadness, the teeth of children in families where much sugar was used and invariably their teeth were bad. One family, relatives of mine, used four barrels of sugar a year. When adult life was reached, there was not one mouth with the full quota of teeth—all had extensive fillings made, and two of the young ladies have their mouths full of crockery substitutes. Employés of long service in confectionery shops and candy factories are also affected in the same manner. It is the excessive use of these articles, simple in themselves, which is doing the irreparable hereditary damage.

How humiliating would be an admission that an American of mixed national parentage could not grow jaw enough to accommodate thirty-two teeth. How humiliating is the fact, that of the twenty-eight or less teeth remaining by permission of the zealous dentist, their durability and use are constantly being jeopardized by a diet of concentrated chemical form. The patient's negligence and an appetite for this kind of food requiring no mastication, needing no insalivation, but which digests in the mouth, dissolves the teeth that dare to insert themselves in such toothsome morsels.

What a shame that condiments constitute such a portion of the diet in the nineteenth century. If we keep on at this rate, in generations to come, the most concentrated acids or alkalies will be barely able to tickle the palate or warm the stomach of a young lady of eighteen years, whose teeth are of insoluble crockery—her ancestors having had the same.

In conclusion, I would like to have said something of the materials to be used in fillings. We have all the elements in Nature's realm at our command. Let us use anything to preserve a tooth if only temporarily—even a substance once proscribed by this old society in its younger days—amalgam.

I trust the dentist of the future will have skill and accumulated knowledge at his command not dreamed of by the most advanced of this day.

CONSERVATION OF THE DENTAL PULP.

BY J. R. CALLAHAN, D.D.S. HILLSBORO, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

For ages the dental pulp has been the subject of much speculation. At the present day, at almost every dental society meeting, more or less is said of the treatment of this very delicate organ. In almost every dental journal of the day, more or less is said of the protection or destruction of the dental pulp. Oftentimes the speakers or writers, as the case may be, are so positive of the supremacy of their methods or theories that they will listen to no arguments contrary to their expressed opinions. At one time the conservation, or the saving or protecting of the dental pulp, seemed to be the only recognized practice, and it was at the risk of his professional reputation that any dentist dare intimate that he was not able to preserve alive and in perfect health, for an indefinite length of time, every scrap of nerve tissue that might remain in any tooth that was placed under his professional care. Of late years a reaction seems to have set in, until today it seems, in some quarters, we have reached the opposite extreme. At the last meeting of the Ohio State Dental Society the devitalization theory appeared to reign supreme. Let us hope we have done with extremes and may each and all of us find our level on this very important point.

It is the object of this paper, 1st, to provoke discussion; 2nd, to direct your attention to a plan of procedure that has proven more satisfactory to the writer than any method yet tried. Please to note we do not claim perfection, to be perfect we should be able to attain the excellency claimed by some of the enthusiastic pulp cappers of 1886–7. Not having reached the dizzy heights of those days, let us compare notes and see what we have accomplished. To save going into tiresome details and to make our position somewhat clear, I will say at once that in practice I do not attempt to cap more than *one* exposed pulp in *ten*, believing that the arsenic should be applied to all pulps that cannot be restored to perfect health. It is my desire to call your attention more to the treatment and filling of deep seated caries, or near exposures of the pulp, if you please. In a large per cent of the mouths presented for treatment you find the decay has penetrated the tooth to such a depth that, if all the decayed dentine was removed the pulp would be exposed. In fact, it is generally the case that the *pain* in *this* class of cavities is what has sent the person to the dentist. The teeth most likely have been giving trouble for some time. Such a case, as you all know, needs careful and intelligent treatment. We should bear in mind that we have to deal with a very delicate organ confined in a narrow, bony chamber; an organ, that while it is devoid of tactile sense, will not bear compression in the slightest degree, and is *extremely* sensitive to thermal changes. Having these most important facts in mind we may proceed to the treatment of these deep seated cases. Great care should be exercised to prevent uncovering the pulp, being careful at the same time to not leave too great a thickness of decay over the pulp. The débris should always be removed by a gentle stream of warm water. After preparing the cavity and applying the rubber dam, the layer of partially decayed dentine over the pulp should be thoroughly sterilized, using for this purpose 95% carbolic acid, having the acid about the same temperature of the tooth; dry the cavity thoroughly, using alcohol and warm air, then cover the decayed dentine with a thick paste of iodoform and carbolic acid, or oil of cloves if you prefer, over this flow a thin paste of oxyphosphate of zinc and give this plenty of time to harden when the filling may be completed with cement or gutta-percha. These fillings should be allowed to remain in the tooth until you are satisfied that there is no irritation or inflammation in the pulp tissue. I have treated in this manner teeth that had been aching two or three days prior to and at the time of treatment, with most happy results. But a few days since I opened, for examination, a sixth year molar that had been filled in this manner for two years. The tooth was aching slightly at the time it was filled; upon removal of the cement filling found the iodoform dry and apparently full strength, the tooth had been perfectly comfortable all the while. The nerve, as far as I could determine, was in perfect health.

I follow almost the same treatment for capping *exposed* pulps. That is, all pulps that I believe to be in good condition. You will observe that I here pass a very important point, viz., the restoration to health of diseased pulp tissue. A case in practice will perhaps be of interest. Miss D. presented herself for treatment complaining of pain in the right superior canine. Upon examination found a large cavity on distal surface of that tooth, found also a small exposure of the pulp. The decay was carefully removed, a paste of iodoform and carbolic acid placed upon the exposure, a metal cap was placed over this to prevent pressure, and in this case the cavity was filled with cotton and sandarach varnish. All pain disappeared in a few minutes after the application was made. The tooth was allowed to remain in this condition for a week, when the lady returned. Found upon examination the pulp, to all appearances, to be free from irritation; rubber dam was applied, tooth thoroughly dried, paste of iodoform and carbolic acid placed over the pulp and a thin paste of oxyphosphate of zinc flowed over this. After this had hardened the cavity was filled with cement to remain two or three months, when, if there has been no unfavorable symptoms, the tooth will be filled with gold, leaving, of course, the cap as it is at present.

I recently placed a gold filling in a right superior lateral incisor in which the pulp was capped as above described. On March 17th, 1882, I found this pulp after six years trial to be in perfect health.

As to the medical properties and action of iodoform, Gorgas tells us that it has no irritant action, and in small doses is tonic, stimulant, anodyne, alterative and disinfectant; also antiseptic and has great influence upon the nervous system. It is not necessary, in this connection, to mention its toxic effects, on account of the small doses that must be used for want of space in cavities if for no other reason. He tells us also, that when the surface of an ulcer or wound is covered with a layer of iodoform in crystals, a certain degree of absorption of the fluids secreted takes place. The products of secretion penetrating these interstices between the minute crystals of iodoform soon loose the liquid form and produce with them an impermeable crust, and under this crust cicatrization soon occurs without any retraction of the tissue.

THE DENTAL PULP.

BY JUNIUS E. CRAVENS, D.D.S., INDIANAPOLIS, IND.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

1st. The pulp or completed dentine papilla is the first anatomical element within the *sac* to assume the form of a tooth.

A deposition of calcific matter on the surface of the dentine organ (the pulp) fixes the character of the *crown* to be developed.

The enamel organ is compelled to conform to the crust of dentine by the binding-in force of the fibrous sac-wall.

Magitot evidently observed carefully upon certain points, but simply guessed at others or accepted without question that which he found ready written upon points he did not feel inclined to investigate. Otherwise I cannot account for his statement that the enamel organ determines or fixes the form of the crown of the tooth. Dean's translation of Magitot's "Origin of the Dental Follicle," contains numerous errors.

2nd. By virtue of fibrils (soft fibres of Tomes) that are projected from the odontoblasts, the pulp presides over or promotes the tubular or canalicular formation of dentine. The odontoblastic fibrils act first as *mandrels*, around which calcific matter is deposited.

3rd. After a slight shell of dentine has been formed upon the surface of the pulp, the further development of dentine *in* the crown is accomplished solely through the agency of the pulp.

When the development of the root of a tooth has progressed to near the proper or destined terminus of dentine, and the walls of the pulp chamber are of proper thickness for strength, etc., a special activity of odontoblasts upon one or more sides of the entrance to the root canal is manifested, resulting in a partial constriction of the canal by development of secondary dentine at the entrance—a condition often noted by practitioners of dentistry.

This constriction evidently is provided for the purpose of reducing the vital force of the pulp within the crown by partial strangulation of that organ, thus reducing the odontoblasts within the chamber to a state of at least temporary inactivity, and preventing further general deposit of salts of dentine upon the walls of the pulp chamber.

4th. Calcification, as described, at the entrance of a root canal, if not interfered with, will eventually so strangle the pulp as to cause its death. An attempt to provide against such a fatal contingency is made by subsequent calcification at and beyond the apical terminus of dentine, by which strangulation is again applied to reduce the vital powers of the pulp, so that the former constrictive calcification is arrested at the entrance to the root canal; and the pulp may thenceforth act only as a central source of supply for surrounding dental tissue (?)

5th. As the apex of a root is always completed by cementum, the apical constriction is caused by development of cementum; never by dentine.

The apical constriction is the indicator by which the operator is warned that he has explored the canal far enough. That which lies beyond the apical constriction, is a sacred temple, designated by Prof. G. V. Black the "apical space," to enter which is disastrous.

6th. If constriction calcification at the ends of the root canal be not performed, then secondary dentine may be developed within the pulp chamber; or, calcification of the pulp itself may progress until the organ dies. Pulp "nodules" or "stones" are also manifestations of a tendency of the pulp to persistent calcification.

7th. It would appear, then, that persistent calcification is the final function of the dental pulp. If so, to what extent is the preservation of the pulp essential to the welfare of a completed tooth in the human subject?

GANGRENOUS TOOTH-PULPS AS CENTRES OF INFECTION.

PRELIMINARY COMMUNICATION BY W. D. MILLER, M.D., D.D.S., BERLIN, GERMANY.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

The subject which I have in mind, not to discuss, but simply to propose to you for consideration or investigation, is one of very great interest to the dentist, as well as the general practitioner and bacteriologist. You are all familiar with the commonly accepted belief that pericementitis and alveolar abscess are in the great majority of cases caused by putrefying organic matter in the roots of teeth. It is equally well known that the same cause may give rise to much more serious results, among others ostitis. necrosis, pyæmia, septicæmia, etc., terminating not unfrequently fatally. It becomes therefore a matter of the greatest importance to obtain an insight into the character of the infection brought about by the agency of putrid gangrenous or suppurating tooth pulps, and of the micro-organisms associated with it.

It is a fact well known, that pathogenic bacteria are frequently found in the human mouth (we might say, I think, *constantly*, particularly in unclean mouths) and a suppurating tooth pulp seems to act as a sort of a sieve to separate them from the non-pathogenic, as I have not been able to find the great variety of bacteria, in tooth pulps, which I have found in the mouth. Moreover the bacteria of such pulps, so far as my observation at present goes, appear to be, as a rule, more pathogenic than the bacteria of the healthy mouth.

The experiments which I have undertaken in connection with this subject, are little more than begun, and Dr. Wright is responsible for their being presented in their present unripe condition. I shall consequently attempt only to describe the methods of experimentation which I have adopted, and to give, at most, one or two of the results thus far obtained.

In order to secure portions of gangrenous pulps which might not be impurified by outside material, I proceeded as follows: The freshly extracted tooth was mechanically cleaned and brought for a moment into a solution of bichloride of mercury (5 to 1000). It was then rinsed in a large quantity of sterilized water, in order to remove the sublimate, split with sterilized forceps and a portion of the putrid pulp removed, of course with a sterilized needle.

The material obtained in this way was used for inoculating mice subcutaneously, a pocket having been formed at the root of the tail for this purpose. Up to the present, I have made 118 inoculations, followed, in a great majority of cases, in twenty-four hours by inflammation and swelling at the point of inoculation. At the end of the second or third day a small abscess will be usually found, which if opened, evacuates a drop of pus densely impregnated with micro-organisms. The reaction is not so severe or extensive as it generally is when a human being is inoculated by forcing gangrenous pulp tissue through the apical foramen, for the reason that in the latter case the point of inoculation lies much deeper and is surrounded by bone tissue.

In the case of the twelfth pulp experimented with, the reaction was very interesting and characteristic. In 12 to 15 hours a blackish or blueish-black spot had formed around the pocket; in twenty-four hours some swelling was noted and already a slight fluctuation, *i. e.*, a slight formation of pus. At the end of the second day a tumor about the size of a pea had developed, which on being punctured, evacuated a considerable quantity of pus mixed with gas and emitting an exceedingly strong and offensive odor. A second mouse inoculated with a small quantity of this pus developed exactly the same symptoms; likewise a third inoculated from the second, and so on to the twelfth generation. At this time I was obliged to leave Berlin for a few days, during which the mouse last inoculated died, and with it this series of inoculations. The specific bacterium of this strictly gangrenous process, I was unable to cultivate for the reason that it, like many others of the oral bacteria, does not grow upon artificial media.

In two other cases the inoculation was followed by blood poisoning, the mice dying in from two to six days, with large numbers of micro-organisms in the blood and organs. From these few experiments, it may already be seen that each gangrenous tooth pulp may be in itself a centre of infection, or it may serve as a channel through which pathogenic bacteria from the oral cavity may invade the tissue surrounding the point of the root, or even obtain entrance into the circulation.

I propose, in the course of a few months, to report at length upon the experiments now in progress.

CROWNS AND CROWN WORK.

BY DR. L. PRENTISS.

There is no crown equal to a nicely fitted porcelain of proper shape, size, and color; yet all-metal crowns are made in abundance, and (despite the patents) much of the so-called bridge-work indulged in. First as to porcelain crowns, I have found nothing that gives me more satisfaction than the Logan, although the How, Foster, and other makes have their advocates. The Logan crown is easily adapted to the root and solidly set with oxyphosphate cement. Where it is thought advisable to band the root, take a strip of gold the proper width, fit the upper half nicely to the root, remove, and solder the edges, forming a band. Set this in a mixture of plaster and pumice, leaving about half of the band exposed. Into this band fit a piece of platinum or gold, of lesser gauge, tack it to the band with solder, remove from the investment, place the cap over the end of a piece of wood fastened tightly in a vise, and with a suitable instrument punch a hole, in the centre of this plate, large enough to admit the platinum post attached to the crown. Grind the crown to fit nicely into the band and set with cement. Now set the crown on the root, with cement, and you have a tooth that will resist much strain and not liable to become loosened through dissolving away of the oxyphosphate. Some prefer gutta-percha to oxyphosphate cement for setting crowns; but if a good quality of cement is used, there will be no trouble, especially where the band is employed in the manner here described.

To make a metal crown, a good method is to use platinum of thirty or thirty-two gauge, and flow scraps of gold foil over the side to be exposed, if you wish to give it the appearance of gold, and shape to the root in the usual manner. The platinum is more easily adapted to the shape of the root than gold, is stronger and will stand any amount of heat without changing shape. The advantages of this over a gold crown are, ease of manipulation, strength, and it is less expensive.

A good solder for such work is made of equal parts, by weight, of silver, copper and zinc. Melt the silver and copper in a crucible and add the zinc in small pieces. After the blue gas dies away, pour the metal into an ingot, and you have an alloy of which you can readily make a good solder by melting three parts of gold with one part of alloy. This forms a superior quality of solder that will not change color in the mouth. While it flows freely on the gold it will not burn when used in soldering.

IMMEDIATE ROOT FILLING.

BY H. A. SMITH, D.D.S., CINCINNATI, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

If we were called upon to fill root canals only in teeth from which healthy pulps had been removed by surgical means, I presume the system of "Immediate Root Filling" would be generally adopted. Cases presenting this favorable condition are, however, comparatively rare, and the dentist finds pulps in all stages of inflammation, decomposing and dead pulps, complicated with disease of the peridental membrane and alveolar abscess, either acute or chronic. It is due to this variety in the cases presented, that practitioners necessarily differ in their methods of treatment and in what they regard as the proper time for permanently stopping a root. If there were no other reason for these differences in practice, they would naturally result from temperamental differences in dentists themselves. The late Prof. James Taylor, when speaking of this subject, would say, that we have a class of good practitioners who are forever treating a pulpless tooth; they appear to recognize favorable conditions, but for some reason have not the courage to fill the root canal permanently, fearing possible subsequent trouble.

The typical immediate root filler of our day certainly shows no timidity in this direction; indeed, his courage seems oftener to run away with his judgment. He is ambitious not only to annihilate space, but time also.

The most favorable cases are those in which the pulp has been removed by surgical means, leaving at the apex of the root simply an incised wound, which will heal by first intention; and in this condition, if proper aseptic precautions have been observed in the removal of the pulp, we may fill the canal immediately, with little or no danger of irritation occurring in the apical space. When arsenious acid has been used and the irritant effects of the arsenic have been confined to the pulp, as shown usually by the slight pain attending its removal, we may also, with comparative safety, proceed to fill at once. If, however, in taking away the pulp any considerable hemorrhage follows, that is not arrested spontaneously, it is not best to fill at the same sitting. The application of carbolic acid or the usual styptics to hasten coagulation, will cause more or less injury to the tissues about the apex, inducing irritation. The better practice in such cases is to leave the clot that has been formed, in contact with the wound until healing has commenced. The blood clot is nature's own dressing and completely filling as it does the root canal, effectually prevents infection from without. By placing an antiseptic cotton dressing in the canal, in contact with the clot, decomposition of the blood will be prevented for several days. In from twenty-four to thirty-six hours, the clot may be removed without disturbing the layer of granular tissue which has formed, and since an antiseptic condition of the root has been maintained, we may, after careful washing proceed to fill permanently. Ordinarily in chronic cases of alveolar abscess with fistula, where systemic conditions are favorable, the root may be filled permanently after thorough cleansing of the pulp cavity and sinus with peroxide of hydrogen, followed by a mild antiseptic such as a dilute solution of carbolic acid or bichloride of mercury.

It is in the management of those cases in which the pulp, having been gangrenous, and as a source of infection for a long period, has caused abscess, with discharge either through the root canal or alveolus, that a radical difference in practice prevails between the conservative practitioner and the advocate of immediate root filling. The statement that all roots can be made aseptic by treatment at one sitting we cannot accept. We have all seen how readily the dentine and cementum of roots of teeth take up coloring matter from the old-fashioned copper amalgam with which they have been filled. If this coloring matter will thus penetrate these dense tissues, certainly septic matter from a pulp that has long been gangrenous will thoroughly infiltrate the tissues of the root, often reaching the peridental membrane. We can then hope to counteract sepsis in these cases only by repeated washings with disinfectants, followed each time with an antiseptic which will not combine with organic matter in such a way as to prevent the effects of subsequent treatment. When we have decided to fill the root, the use of a powerful coagulator, such as chloride of zinc, as a last dressing is indicated. This "cooks" or "vulcanizes" the albuminous matter and renders it, as it were, fixed material. When oxychloride of zinc is used to fill the root, this effect is produced by the zinc chloride in the material.

The attempt to obtain an aseptic condition by burring out the root canal in which the pulp has been in a putrid condition for sometime, would it appears be idle; as would also the practice of correcting sepsis by introducing into the root canal the point of a heated instrument.

Those who advocate immediate root filling it appears place great reliance upon what is termed, "vis medicatrix naturæ." This recuperative vitality is, in the mouth, as in all parts of the body, an unknown factor, and cannot be measured accurately. Since the source of contagion in these chronic cases is not confined to the pulp chamber, we would do well to keep the root canals open until we have some better evidence of cure than the cessation of discharge through the external opening, which may follow a single treatment. Granulation tissue may form in the apical space, and along the walls of the sinus and the fistula may heal; yet a cure is not certainly effected. The balance between health and disease which obtained for a short time, has turned on the side of disease; the new tissue formation gives way and we still have a chronic case of abscess. May we not treat such an abscess through the opening in the gum after having filled the root? We may; but not nearly so effectually as when the opening is maintained through the root.

In cases of blind abscess and other trouble following this hasty method of treatment, the surgical procedure of drilling down upon the abscess is freely spoken of as an effective and easy operation. In all surgical treatment two people are to be considered, the operator and the one operated upon. The immediate root filler in the zeal of his universal method, seems to have left out of consideration the person upon whom he inflicts the wound. Besides the uncertainty of affording relief by drilling through the alveolus in cases of forming abscess, is the disagreeable fact that the operation should be performed at the most painful stage in the inflammation, that is, just before the formation of pus.

The papers and discussions which have appeared on this subject in the last two years have, at least, had a wholesome effect upon our daily practice. It has resulted in the adoption of better methods of antisepsis and a stricter cleanliness of both the operator's instruments and person; the action of certain medicaments has become better known, and the relative potency of a great number of antiseptics carefully studied. More exact methods of root filling are being practiced, and we shall, no doubt, in the future have more uniformly good results in our efforts to save pulpless teeth.

DISCUSSION.

DR. ATKINSON spoke of the septic condition of roots and the necessity of cleansing to, and often beyond the apex. He stated how uric acid accumulated, and the necessity of its speedy elimination from the system.

Regarding immediate root filling, if there is no periostitis he said to go through the foramen and fill immediately, as it is not necessary in most cases to wait any length of time. In alveolar abscess we get suppuration and hyperplasia. After speaking of these and pus formation, he said to relieve the patient from severe pain, while opening up an abscessed tooth, to tie a strong cord to the neck of the tooth and request the patient to pull on this and not loosen the hold. If the pain is still felt, request him to pull a little harder, and keep this up until you have drilled through the foramen; and if you go beyond the apex it will do no harm.

He here spoke about disinfecting being carried to extremes, and that he had years ago used bichloride of mercury for disinfecting in the same manner as that of the present day, for all it is now used *scientifically.*

He said he did not go much on micrologists. He used to be one of them himself. A man that has been to camp meeting and been converted six or seven times generally knows what he is talking about.

In regard to arsenic, or arsenious-acid, he said it has no affinity for the tissues and does nothing but take the place of the pabulum in the tissues.

DR. WATT: After all, the point to be gained in practice is for a man to question himself, and if he cannot answer his own questions and understand himself, he is not fit to act.

Regarding the patient you should not be satisfied until you have inquired of his family history. Perhaps not satisfied with this you may inquire into other things such as constitution, habits, etc. If he has excessive habits as smoking, beer drinking, and the like, do not operate immediately. You must know all of these things before operating, if you want to be successful.

Dr. Conrad: I treat these teeth and in almost all cases fill immediately. After examination wash out the cavity with peroxide of hydrogen and go carefully to the end of the root, and when you know it is clean, fill it. When you find a molar with a calcarious deposit in the pulp chamber, you may think there is no opening into the root canal, but there is, and unless you go through this you will be liable to have trouble. When a root is filled to the apex perfectly with a hard substance, you should never have any trouble. My creed is to wash out the cavity thoroughly with warm water and then peroxide of hydrogen. Be cleanly, thorough, and open into every root canal. Never let a cavity go unfilled where there is a bit of pulp tissue, and never let a root go until it is filled to the end.

Dr. Jay: The gentleman says never leave a portion of a root unfilled. I would like to inquire how he serves the molar roots?

Dr. Conrad: I cut through the crown, where I can, or even through the side just so I get into them. Perhaps we experience more trouble to find the opening in the anterior buccal root of the superior molar than any of the others. Where a root is tortuous, you must not drill straight or you will penetrate the side of the root and have trouble. It is best to go about one half or two-thirds of the length of the root, then with a smaller Morey drill continue a little farther, then use Swiss broaches; keeping the canal flooded with peroxide of hydrogen. When this is carefully worked into the root the effervesence causes the infectious material to be thrown out of the root toward the pulp chamber and not through the apical foramen. Where there is a deposit in the chamber, and you cannot find the opening into the canals, place a little of the Herbst obtundent in the tooth and leave it until the next day, and if necessary repeat the operation until this covering is dissolved away and the opening is exposed.

Dr. Sage: Care should be used in the injection of medicaments into the substance of coagulated lymph or cellular tissue, for inflammatory action is liable to be set up. We often force the medicament through the root to the so-called pyogenic tract and get irritation and what we call over-treatment. I think it is not necessary to force any of this medicine through the root unless there is a sinus. The root canal should be kept flooded with antiseptics, and more precaution used if there is no fistulous opening. We should consider the question of diathesis of the patient, as there are certain symptoms we may recognize if we are observing. If a person has high cheek bones, is of stout build with a short neck, and has long bones, it points to a scrofulous diathesis. We have other indications of this in persons of a nervous or sanguine temperament, as those with red or sandy hair, light complexion, long slim necks, and flat chests. In these subjects immediate root filling is not advisable.

Dr. Ames: I believe that where we have no acute inflammation at the time, we can thoroughly remove the contents of the canals and fill immediately. In regard to iodide of potassium I have been in the habit of decomposing it by the galvanic current. Place the negative pole against the face of the patient, or let him hold it in the hand, and place the positive pole on the tissues where you require the decomposition of this substance. My method of disinfecting root canals is to take a Swiss broach, gold plate the point to prevent oxidation, attach to or hold in contact with the positive pole of the battery, and work it carefully and slowly to the apex of the canal, decomposing the iodide and thoroughly disinfecting. Then cleanse and fill the root immediately.

Dr. Jay: I have found nothing better than gutta-percha as a filling material for root canals.

Dr. Taft: There is wonderful unanimity in all these discussions. Every one has said he thinks that roots may be filled as soon as they are ready to be filled. This cannot be denied. We have a great variety of cases presented to us, and we must, as Drs. Watt and Atkinson have stated, take the accidental changes into account. If a patient presents himself and the surrounding circumstances are favorable, you can fill at once; but if a portion of pulp tissue or decomposed matter remain, it is not advisable to do so. Test this by placing a small pledget of cotton into the cavity and leave it for several minutes, then remove. If the cotton smell offensive, and you close up the cavity, you will be liable to have trouble. If there is diseased tissue that needs to be disposed of at the end of the root, break it up. If this is not necessary, get the root into the best possible condition and seal with chlora-percha, being careful to avoid pressure. Care should be exercised in using carbolic acid. It is used too much. Apply the dam and use hot air as a coagulator. All these and other things should be taken into account before filling.

Dr. Fletcher had a failure to report. A man who had taken whisky, and perhaps quinine, had a superior right lateral that had been sore for five years but had given no particular pain. It needed refilling, and in taking out the filling he found the pulp chamber empty. There was a slight odor and soreness. He used peroxide of hydrogen, as Dr. Conrad suggested, carefully filled the tooth, and dismissed him. The next day he returned suffering from the effects. He punctured the alveolus, got a discharge of blood which relieved the patient somewhat, but to-day that man is in bed.

Dr. Sage spoke of peroxide of hydrogen, its action, etc. He then referred to the treatment of root canals with chloride of zinc to coagulate the albuminous materials.

Dr. Atkinson: When treated in this way, hydro.-chlor.-zincate-of-albumen is formed. On removing this from canals, I have found it to be clear as glass, and have said that I did not know of a more perfect filling, but how long it would remain in this condition I do not know. He spoke of gaseous bodies penetrating the tissues, and that he had seen blood abscesses which required a long treatment and gave all the symptoms of necrosis. Such cases usually succumb to a solution of salt and water followed by applications of aromatic sulphuric acid. In treating diseases where the system needs toning up, he had found McKesson & Robbin's preparation of nux-vomica and phosphorus cantharades of value. Take a two-grain capsule of sulphate of cinchonidia twice a day, and one pill of the nux-vomica preparation at night. This gives the system tone, and then your other medicines will take hold.

When a pus abscess is treated with peroxide of hydrogen, we get a creamy mixture and effervesence. You can prove the action by applying a heated instrument. If carbonic acid is generated, the instrument is colored black; if oxygen is present, the heat is increased; and if you get a flame, it indicates the presence of hydrogen.

INTERMITTENT PRESSURE. ITS RELATION TO ORTHODONTIA.

BY LEVITT E. CUSTER, B.S., D.D.S., DAYTON, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

No branch of our esteemed profession has received such an impetus of late as that of correcting irregularities of the natural teeth. In fact, it has reached such a point that the child has received a scientific name—they call it Orthodontia—and its devotees are wrangling over the priority of invention.

To move teeth in the alveoli, we are dependent upon the same fundamental principle of the animal economy as that by which all change of shape in osseous structures is accomplished, namely: resorption and deposition. The theory was once held that there was an interstitial change, but at present we believe there is an actual digestion and excavation in one portion, and a new deposition taking place in another. During the preparation of the lower jaw for the permanent molars, the ramus is carried back, not by an interstitial development, but by a resorption anteriorly, and a deposition posteriorly. When lime-salts have once been deposited as the basis substance of bone, they, by virtue of their intense hardness and heterogeneous nature, retain that form until reduced by retrograde metamorphosis to the embryonic condition.

Resorption, as a physiological process, takes place under the agency of a class of cells which may be understood to have a retrograde function. They break down tissue already built, and under accidental conditions reduce foreign substances of animal origin to a condition fit for assimilation by osmosis. Such cells, according to where found, have been termed leucocytes, giant cells, osteoclasts or odontoclasts.

The above cells, even though of retrograde function, like all others are brought into action by adequate stimuli. Every different cell requires a special excitation; for the cells of the salivary glands to act, there is reflex nervous irritation orginating in the gustatory cells; for muscle cells, motor impulse; for giant cells, a thrombus, an infarct or foreign body; for odontoclasts or osteoclasts, the effort of nature to change the size or shape of a preexisting osseous structure. Osteoclasts are also stimulated by pressure, and upon the latter do we depend for change of shape in the alveolar process for correcting irregularities. When nature has once fashioned the alveolus and the arrangement of the teeth to satisfy her own typal demands, we can ask no more of her as a stimulant, but must resort to the other method; namely, pressure. All the forms of pressure for regulating resolve themselves into either of two classes of forces, intermittent, or constant. Under the former may be classed those forces which move to a definite distance and there remain stationary, such as the screw in all its forms; under the latter, constant force, all those which bear with an elastic or continued pressure, such as the spring or rubber bands. Intermittent pressure acts intermittently as such because the space gained by absorption is not followed up immediately by new pressure only as it is applied by the operator.

The method by which giant cells, leucocytes, osteoclasts or odontoclasts, cells of retrograde function, reduce substances has been designated by Dr. Black as resorptive digestion. We understand these cells to have the property of throwing out a digestive fluid which acts as a soluble ferment analogous to that of ptyaline, pepsin, or trypsin. In each case this fluid varies according to the nature of the object to be digested. Krause maintains that in absorption of osseous tissue this fluid is lactic acid. In order to act, these cells arrange themselves so as to be in direct apposition with the part to be digested, they become in actual contact. Implanted teeth, the roots of which are undergoing absorption, contain pits which are lined with odontoclasts. In the formation of sequestra of bone, osteoclasts are found at the line of union of the dead with the living; ligatures are surrounded and crowded with leucocytes. In sponge-graft, granulations are filling up the pores while giant cells are preparing the walls for osmosis, and blood-clots become organized by the presence of connective tissue cells. Dr. Black says, "The osteoclasts are not attached to the surface of the bone or tooth by any mechanical means whatever; they simply lie against the surface and are detached with the least movement. They act only, however, when lying in contact with the surface. Any intervening substance whatever will prevent their action."

From the foregoing it is evident that the action of osteoclasts may be lessened or entirely suspended by either of two conditions; dilution of the digestive fluid, or separation of the cells from the point of absorption. When resorption is produced artificially, and it is agreed that pressure is necessary to stimulate osteoclasts, as the result of pressure there are associated conditions affecting the action of these cells, which vary according to the method used. By one method of pressure the digestive fluid may be weakened, or by another the cells may be separated from the seat of absorption by intervening bodies. Any form of pressure in orthodontia, if continued long enough and hard enough, will produce hyperæmia followed by inflammation and possibly by suppuration or abscess. When hyperæmia occurs we have a serous and a corpuscular exudate which infiltrate the surrounding tissue. Serum being a liquid which in small quantities is taken up by the lymphatics, but when increased, producing œdema, readily comes in contact with the digestive fluid of the osteoclasts which is diluted and resorption retarded. On the other hand, the blood corpuscles of hyperæmia not being liquid insinuate themselves between the cells and the point of absorption and become a mechanical obstruction to their action. In inflammation we have as well as the serous and corpuscular, an additional one, fibrinous, which at first acts mechanically and after liquefaction becomes a menstrum for weakening the digestive fluid. The result of mechanical obstruction to the action of these cells is no better shown than by the resorption of the roots of temporary teeth where the process is stopped by the occurrence of abscess. In this instance the resorptive cells become disseminated among the pus corpuscles, and not being able to act unless in contact, the process ceases. Resorption is more marked when the digestive fluid is undiluted, but when it is disseminated in the serous exudate of hyperæmia, fibrinous exudate of inflammation, or the pus corpuscles of abscess, it becomes retarded. Herein lies the problem of the efficiency of the different methods—to stimulate retrograde cellular activity without producing excessive hyperæmia or inflammation.

Cognizant of the fact that resorption produced by artificial means or by external agents is not to be compared with nature's physiological process in that we have to deal with two opposites —to stimulate osteoclasts by pressure and at the same time prevent excessive hyperæmia and inflammation, the results of pressure—we may yet by a peculiar method of pressure produce a process approaching very closely nature's own. Such a method of pressure besides being sufficient to stimulate osteoclasts to action will allow, first, regain of tone to the blood vessels and lymphatics in the region of pressure; and second, it will allow free exchange of pabulum and rapid entrance into the lymphatics of the dissolved bone tissue. Of the first condition, I say there will be regain of tone in the vessels, because pressure of any kind tends to paralyze the vaso-motor nerves in that region and hyperæmia will result. Let the pressure be continued and the exudates of hyperæmia will follow, which will retard the action of the osteoclasts in the two ways that have been shown. On the other hand let there be an intermittent pressure, and the room gained by the osteoclasts while under pressure will allow regain of tone to the vessels during that period which some have denominated "rest."

The osteoclast like all other cells has three properties, ingesta, assimilation, and excreta; it also ceases to act when this excreta is not removed. Since the lymphatics under pressure cannot so readily absorb the waste products of the body, and since under continued pressure we have continued stimulation and continued action of osteoclasts, as a result, we have a continued formation of excreta in the most unfavorable conditions for its removal; but let this pressure be such that it will expand to a definite distance and there remain stationary, then the space gained by active work of the osteoclasts before their action is stopped by the excreta or dissolved lime-salts will allow their escape by the lymphatics which have regained tone. Under continued pressure there is not a free exchange of fluids; mechanical resistance keeps back pabulum, and the osteoclasts become surrounded by their own dêbris.

Besides the peculiar fitness and adaption of intermittent pressure in the above two fundamental conditions for a physiological performance of resorption, there are other minor qualities which render it still more desirable as a system of pressure to be used in orthodontia. More force may be applied by this method than by the other, and the teeth acting as a lever will under this increased force produce enough pressure, not on the edge alone, but in the body of the alveolus to stimulate osteoclasts in that portion. Were elastic pressure applied even to inflammation, this would not be strong enough to produce resorption at any other point than directly opposite the tooth. I think there is more in this than we are willing to admit. To produce any other resorption than opposite the tooth by elastic force the peridental membrane would run high in inflammation. This is an easy thing to accomplish with intermittent force since we are able to apply many times the amount of pressure with less danger of inflammation.

It is a *positive* method, and distance gained by its use is definite; it may be measured with mathematical precision; also holds what has been gained.

It needs no renewing; once in place it may be used, as a general thing, until the end is accomplished. As a result the new depositions of osseous materials are not interfered with as they would be when the tooth is drawn back by the fibers of the peridental membrane during change of apparati; the death of pulps has been attributed to breaking or changing of appliances.

Under intermittent pressure we have a work almost painlessly performed, because more nearly a physiological process. According as are all either constructive or retrograde processes physiologically performed are they painless, and as they approach the pathological do they become painful. We have a work more progressive, because of continued action under natural laws,—not an action that is half inflammatory; and a work that is more effective, because produced by causes which work more in harmony with nature, which allows regain of tone, free exchange of pabulum, and more favorable conditions for contact of resorber with resorbed, and an undiluted action of the digestive fluid.

DISCUSSION.

Dr. Watt: I think I was among the first to advance this thought. I see Dr. Angle says to "keep up the pressure without intermission." Another place he says "there should be no backsliding." I think Dr. Angle meant to convey the idea that the pressure should not be lessened enough to let the tooth take a retrograde movement. This should be avoided; but the pressure should be released enough occasionally to give the tooth and associate parts a rest. When a tooth is moved backward or forward, a portion of the peridental membrane is compressed. The same thing occurs when rotating, only it is more severe; and unless you give the tooth an occasional rest, it is liable to cause severe inflammation.

Dr. H. A. Smith agreed with the paper and thought it according to physiological laws; and yet, good results had been brought about by continued pressure. He believes that in the continued pressure method the teeth receive more rest than is generally supposed.

Dr. Wright said he liked to see a mixing up of physiology with mechanics. That is the plan on which we ought to operate; for it raises us up above the common level.

THE VERY WORST.

BY A. SPYER.

[Written for Dr. ———, who has spent with me so many profitable hours.]

Pause for a moment and reflect if you have ever done a mean thing. Were you always fair and aboveboard with fellow men? What was the meanest thing you ever did?

I'll tell you the worst thing I ever did, and I fear for my life that the memory of it will haunt me to my grave! I stood in a dentist's hall one day, before his door was open. A lady came up the stairs, glanced at the red card saying civilly, "Come in," and in she tried to walk. The sarcasm of that placard within a fast locked door! As she went down the stairs the hideous resolve formed itself in my mind to witness what *pleasant* (?) thing she sought inside that door. Soon the dignified doctor of dentistry arrived, applied his key, and entered.

The young lady returned, and this time found she could accept the placard's invitation. While both were talking a few moments in the front room, I entered at another door, and being a thin man, took my stand at the end of a tall bookcase. (May gentle fortune not requite the evil deed!) All trustingly, dressed pertly, the dainty Miss ascended to the awful chair. I cherish to this hour the compassionate pang I felt for her that moment.

Before her was drawn out a little shelf, and a number of delicate, fatal instruments were spread out as if it lay for her to choose by which one she should be slain. Nay, she should not choose *one;* the dentist will choose *all!* Fearing she reads his thoughts, the good man begins to talk — now of the weather, the latest death, the frequent marriages, the season past, the last night's lecture, and so on. In the mean time he has tipped back her head, opened wide her mouth, inserted a mirror and a *spear* and begun his work. I know these gentle ladies love to talk, and all the pain she bore was doubled because she could not even answer yes or no, or manifest an interest in all he said.

I longed to be a mirror that I might entertain her by showing how she looked, reclined at (seeming) ease, with her head at a most ungraceful angle, her mouth perpetually gaping, and the teeth usually seen in "pearly gleams through rosy lips," now painfully exhibited.

"O wad some power the giftie gi' us
To see oursels' as ithers see us!"

To entertain herself, she counts the strips of paper on the ceiling; she notes the cracks behind it in the plaster; she makes an estimate of last year's flies, on the standard of six spots to a fly; and still her mouth is opened to its widest extent. She glances towards the bookcase and reads such charming titles there as "A System of Horrible Dentistry"; "The Theory and Practise of Torture"; "The Science of Killing"; "Prehistoric Teeth"; "Dentistry the Salvation of the Race." Just then the doctor turns back her head a little farther, and introduces his tiny grindstone. A sudden smothered shriek almost brings me from my hiding place to offer her my handkerchief.

Presently he finds that is not bad enough. He shapes a little wedge and forces it between her suffering bicuspids. Ah, now she weeps, poor lady! Does he relent? Oh, no; he sees as I do that her tears are not the sweet drops from wounded heart or conscience, but are hot, angry tears. She makes a spiteful dive with her handkerchief to wipe them off. Then comes the hammering. She shuts her angry eyes. The filing is begun. The fair hands grasp the chair arms; she strikes impatiently with her feet; the cold sweat gathers under her tumbled bangs; her brows are so drawn into knots I fear they will never be straight again. And still he files as undisturbed as if he murdered victims every day and expected them to squirm. His file breaks. Sudden visions of liberty flit through the suffering head. "Good!" I hear her mutter with some energy. He takes the other end and calmly answers, "There's plenty more where this one came from!"

At last the task is done. He offers her a looking-glass that she may see how well the work is done. Man do you think she will be pleased? See how she notices first the red lids of her eyes, her tumbled hair, the pallor of her cheeks. Every tooth in her head is aching, I know, and her tired jaws shut with a slam as if the hinge was rusty. And how much will he charge for the suffering she had taken at his hands? Oh, the audacity! The dentist gives the bill, and she succumbs without a struggle. She who came in so gay and fresh does not trip out as she tripped in, but humbly hurries away, a sadder and a wiser woman. The doctor goes to dinner and I steal away for mine, thinking of the two men though strangers, who, dining together at a hotel, fell into converse about the Reformation and the horrors of the Inquisition. Both were deeply learned in history, and they spoke of death at the stake, on the scaffold, by broken joints, by cold, by water, by starvation, and by dismemberment. Finally they laid a heavy wager for the one who could remember or imagine the most awful death, and so they parted to report at nightfall. One sought a friendly cyclopædia, the other hurried to the public library, each in diligent labor sought to win the prize.

At night in a dim unlighted room, after their tea, they sat together to compare results. One told of starving within sight of food; the other told of death by dragging at a wild horse's heels. The first one told of the iron cage, and suggested red hot irons thrust upon the victim through the bars; the second told of battling with trained dogs unarmed. And so their tales ran on, each more fearful than the last. Their cheerful fire went out, slow clouds marched before the moon, a distant owl began a dismal hoot, and to make the night most hideous, a stray dog set up a hopeless howl. "Hark to my last story," cried the first grave student. "Could any death be worse than being held in one position while water trickled drop by drop upon one spot of the head? Fancy how the hair would first drop out, then flesh would rot and fall, then slowly bone would wear away under the persistent drops. It would take years to penetrate to the brain, but welcome would be the one drop which should bring the liberty of death." And both men shuddered. At length the second gray-haired student spoke. "It would be worse, I think, to thrust your feet into iron boots filled comfortably with rats and mice, then have the boots made hot. The creatures seeking to get out would not gnaw upon their iron walls, but your bare limbs would suffer. Fancy them squirming, squealing, scratching, gnawing upon your flesh until you dropped!"

The first man stumbled to the door with shaking limbs and rising hair. "In God's name, bring a light!" he hoarsely called. That tale had won the wager.

Well, I don't know. Had I been there I should have won that wager by suggesting that for refinement of agony, a dentist's little grinding drill should be set going in the mouth. Push back the head, insert a gag, start the little buzz, and let it travel all around through teeth and nerve and nerve and solid teeth, until a passage way is made to the brain. Can barbarity in any way stand equal with the refinements of civilization? Have I not found *the worst?*

Correspondence.

"I charge you that this epistle be read."

CRITICISM.

BY A. BERRY, D.D.S.

Not being at the late meeting of the Ohio State Dental Society, the writer sent a paper which was read at the session by Dr. Betty, who, of course, understood its contents.

The paper was written with the expectation of exciting criticism; which, if just, would have been unobjectionable. Let critics keep to the record.

The following extracts from the paper and report of the discussion, both published by direction of the society, may not be improper.

From the paper: "When a patient desires the removal of a tooth an examination is in order, to decide as to the propriety of complying with the request. If there is a probability of saving an important tooth by treatment, the patient should be made aware it. If extraction is still desired it is generally well to remove the tooth, unless its retention is very urgent. Usually under these conditions, the patient having little faith or patience, treatment will prove troublesome, and if successful the bill will be grudgingly paid, and the benefits obtained not properly appreciated; and if annoyances ensue the dentist will be censured for not having acceded to the requested removal at the first visit."

From the report of discussion: "Dr. E. G. Betty was astonished that a man of Dr. Berry's standing should put on paper and sign his name to such an outrageous doctrine; *i. e.*, that a good tooth should be extracted if the patient insists upon it."

The reader of the above extract from the paper on which the criticism is based, will see that the charge is destitute of foundation in fact. Badly diseased teeth only, not those that were "good," were spoken of in the extract.

[The above item, or its equivalent, was sent us immediately after the appearance of the publication referred to, but by some mystery was lost. This was intended for the March number, but reached us just after "page proof" had been returned with orders to print. As it was important to not delay that number, we held this over, and have placed it here. Its insertion and this explanation are but just to our friend Dr. Berry.—Ed.]

Compilations.

"Gather up the Fragments."

SOAP AS A FACTOR OF HEALTH.

BY JOHN V. SHOEMAKER, A.M., M.D.

[Abstract of a Lecture delivered at the Philadelphia Hospital for Diseases of the Skin.]

There is a familiar old quotation which we have all had well scrubbed into us, and which runs to the effect that "Cleanliness is next to Godliness." Only those who come directly in contact with "the great unwashed," and physicians especially, realize how godlike an attribute is the absence of dirt. Soap is one of the most important factors of civilization. As some of our historians have put it, nations have escaped from barbarism with a persistence that may be measured in bars of soap. It seems, therefore, especially unfortunate that any agent which has wrought so much benefit to mankind should be subjected to serious abuse; that soap, in a word, should be subject to adulterations which reach upon the health and comfort of mankind.

The vast majority of people are quite ignorant as regards the proper constitution of good and pure soap. It is needless to say that there is a positive failure to appreciate the dangers incident to the use of an adulterated or poorly-made soap. This is all the more surprising in view of the fact that a brilliant complexion, a soft and delicate skin, are so much admired, while a universal repugnance is felt for the loathsome skin diseases to which impure soaps may give rise. The common practise in choosing a soap is to select one on the basis of price, appearance, and perfume. This is altogether wrong. Economy in soap, like economy in drugs, is a poor policy. Appearance is no guide whatever. Gelatine, starch, talc, and other adulterative materials are often coupled with insoluble and injurious coloring matter to give the soap weight and an attractive appearance, but resulting in a harmful action upon the skin and its easily injured appendages. Perfumes, which are very agreeable to the sense, are frequently due to the presence of irritating oils and aromatics, which cannot be used without incurring dangerous risks. No person should venture to use a soap which has just been picked up by chance in a shop on the hap-hazard recommendation of a salesman. Before using any of these mysterious manufactures, something should be learned of their chemical constitution. A soap may be excellent so far as its cleansing properties are concerned, and yet be highly destructive to the epithelial tissues, in which it may set up an inflammation resulting in disease and disfigurement. Roughness of the skin and chapping of the hands are very general evils due to the use of impure soaps. There are also very many cutaneous affections aggravated or induced in this same way.

A word about the mode in which soap is prepared may demonstrate how great the possibilities of adulteration are.

Soap is made by a chemical reaction between a fat, or fixed oil, and a caustic alkali, resulting in the formation of an oleate and the substance known as glycerin. In the first place, then, we want a properly constituted oil or fat—not one in which there is extraneous organic matter present, threatening decomposition, and consequent "rancidity," by the development of free acid. Soaps made from such fats are necessarily irritating. The best agent now known is pure olive oil, which, under the action of a proper alkali, is transformed into a soluble oleate, the corrosive alkaline properties of the reagent being also dissipated at the same time. The quality of the alkali used must, also, be considered in the manufacture of good soap. Lime and other earthy bases are useless, as they form compounds insoluble in water. Potash and soda may both be used, but the potassium oleate (soap) is soft, while the sodium oleate (soap) is hard. These alkalies should not be contaminated by the presence of carbonates, or the earthy substances referred to, else the irritating effects will again be incurred. No mineral matters, such as are present in all mottled soaps, should enter into the composition of good soap; and, even granted that the chemical constituents are of the best quality, a certain amount of skill is necessary to combine them with the best results. If the elements of soap are not in nice and exact proportions, an excess of caustic alkali, or an unpleasant oily residue, will be present. The object is to secure a compound that will cleanse the skin without disintegrating it, or checking its healthy action, by a stoppage of the pores. It is, therefore, manifest that the chemical qualities of soap should be established before it is used. Dr. Henry Leffmann, of Philadelphia, Hygienist and Food Inspector of the Pennsylvania State Board of Agriculture, has made the following analysis of a number of soaps procured from those offered daily in the shops:

1. Free alkali; excess of carbonate of soda, 0.75 per cent.; no filler.
2. Free alkali; 2.25 per cent. of carbonate of soda; no filler.
3. Trace free alkali; small amount of carbonate of soda; large amount, about 15 per cent., of insoluble filler.
4. Small amount of carbonate of soda; insoluble mineral color.
5. Free alkali; no excess of carbonate of soda; no filler.
6. Free alkali; 4.25 per cent. of carbonate of soda; no filler.
7. Contains rosin; no filler.
8. Free alkali marked; and 28.7 per cent. of insoluble mineral matter.
9. Trace free alkali; no excess of carbonate of soda; no filler.
10. Free alkali; 1.55 per cent. of carbonate of soda; no filler.
11. No free alkali; no carbonate of soda; no filler.

From the analysis just stated, you will observe how very few good and pure soaps, free from adulteration, are now on the market. The specimens submitted to Dr. Leffmann were selected from those employed, or recommended as the soaps to be used for toilet purposes. A careful consideration of the ingredients of these so-called standard soaps will convince you of the injurious effects often of their application to either a diseased or healthy skin. The last named soap is known as the "Althene Skin Soap." It is a neutral, pure soap, and the very best, upon a most careful examination, of all the above specimens.—*Medical Register.*

Editor's Specials.

"Write the Vision and make it plain."

MISSISSIPPI VALLEY ASSOCIATION.

This mother of dental societies, who, like the eagle, has renewed her youth, held the forty-fourth annual meeting, beginning on Wednesday, the 7th day of March, 1888. As the President, Dr. A. W. Harlan, was beyond the seas, Dr. Wm. N. Morrison, of St. Louis, once a pet pupil of ours, and now Vice-President, presided. The other officers were all in place, and on duty, and all did well. Dr. C. M. Wright seemed very wide awake as Chairman of the Executive Committee, and much of the success of the meeting was due to his good sense and energy before and at the meeting. He is a regular Charlie horse,—that is he works well any place in the team. He always did. Even under our training as a colt—no, student, he was always counted *one*, if not two. All the members were about as wide awake as he, but having been appointed leader, he *led*, and we hope his good example will be followed by his successors. To sum up, the late meeting was well attended, active and energetic, reminding us of the good times when the few lingering and many departed patriarchs "ran the machine."

The papers read will be laid before you in the pages of the Journal, and we will have some report of the general discussions. But, poor fellows, you ought to have heard them, and caught the spirit of the meeting. Describe the beauties of sunlit June to one born blind, and you give him an idea of them about even with the best any writer can do in describing such a meeting. We joined the Association in 1852, and have never missed an annual meeting since, except when physically unable to be present. And to us the late meeting was a grand treat, even though we are forever out of practice. Don't make us ashamed of you next time by a wanton neglect to attend. We hope to be there on purpose to see you. But read and study all the papers. Can't do better this time.

DENTAL MISPLACEMENTS.

Correcting deformities of the mouth, and guiding misplaced teeth to their natural and proper positions in the arches, are now more generally regarded as within the domain of dental surgery than ever before. Dentists still need light, of course, but tyros now surpass the attainments of experts of but a few years ago.

The progress of our profession shows to better advantage in this direction than in any other. But the people need enlightment. What parents, in even moderate financial circumstances, would permit their beautiful little daughters to develop oral monstrosities, that frighten their baby brothers and sisters into fits when they try to bestow loving smiles, had they read this Journal, and studied the pictured possibilities set forth by our Doctors Keely, and Angle? What young man would go into society disgusting his lady acquaintances with gorilla-grins when trying to bestow smiles of politeness? A club-foot he can hide, part of the time, a disfigured hand he can conceal in a side pocket, and pretend his arm is paralyzed; but how can he face the music or the public without displaying his "teeth of dragons?" After awhile he may think he has hid them by a heavy beard, and may pity his poor sister that she cannot enjoy such concealment. Get his address, and send him the books and the pictures, duplicated so that he can supply his sister, and thus you may notify also their "sisters and cousins and aunts." In other words, the professional possibilities in this line should be more generally known by the public.

Among adepts and experts in this department there should be no jealousy. If one takes a step in advance in a certain direction, let others step up even, rather than try to pull him back. One may suggest an appliance, different from any heretofore used, and it is not to be supposed that on this account he must ignore, and abstain from the use of all the good things already devised. A patent for a new plow is not refused because the inventor proposes to use steel for the mold-board, share, and cutter.

Those who undertake to correct irregularities should carefully study the textures, and the principles involved. When these are understood, and are given due consideration during the process, any apparatus yet devised may answer the purpose, and good results may follow.

Suppose that a tooth is to be simply changed from its present perpendicular. Take, for illustration, a tooth with but one root, and it is to be pressed outward or inward. Remember you are working on living tissue, which must continue to live, if any betterment is to result. And what are you doing?

The pressure is mainly against the membranes within, and the walls of the socket near the margin on one side, and at and near the apex on the other. All who understand the lever must know this. Inasmuch as the root is attached to the socket, pressure on one side implies distension on the other. The parts neither pressed nor distended can perform their normal functions; and in a case like this, the vital connection between the membranes and the cementum is kept up by tissues but little disturbed.

It is a well recognized law that when there is irritation there is a thitherward flow. Irritation results from the pressure, and also from the distension already described. The pressure has cut off the supply, and death of molecules results. These are dissolved in the arriving fluid and carried away. The pressure excludes nutritious fluid from the minute vessels pressed. The removal by solution gives room for the desired change of position.

But a flow to the opposite side of the socket, where distension has occurred, also takes place. Nutritious fluid can easily penetrate these distended vessels, and new vital tissue is formed to fill up the partial vacuum, and new socket wall is formed behind the receding root of the tooth.

If at this stage the pressure is taken off, the tooth tends to return to its abnormal position. The minute vessels weakened, but not quite obliterated by the pressure, are promptly distended, while, for lack of tonicity, they are not able properly to expel their contents, and inflammation is a result. On the other side of the socket pressure has taken the place of distension, and pressure on vessels not able to unload themselves also means inflammation. All can see, by a little clear thought, that there should be no going backward during the process. Mischief is sometimes done by too much delay in readjusting the apparatus.

After the tooth has begun to move in the desired direction, all the motion gained should be held, but it does not follow that there must be constantly progressive pressure. When but slight change is called for, it may be gained by a single and continuous effort; but if great pressure and much change of textures are necessary, and especially when much irritation ensues, it is better for a time to hold what has been gained without increased pressure. The tissues approach the normal state, pain abates, and we can go on again with safety. Of course we recognize that many cases of rapid and continued pressure do well; but that is not strange in these days of replantation, transplantation, etc., but a good tooth in proper place, by due process of regulation, is to be preferred to one replanted.

Some of the advocates of continuous progressive pressure unintentionally, it may be, give the periods of rest above advised; and we believe the supposed difference of opinions as to the continuous progress, or "pressure and rest" systems, is more apparent than real.

It is important to bear in mind that in rotating a tooth there is pressure throughout the entire socket. Prudence is more called for than in other cases.

This subject is undergoing discussion now, and we add our mite, and are ready now for another subject.

ABSTRACTS WITH COMMENTS.

COCAINE AS AN ANÆSTHETIC.

"A GREAT deal of minor surgery can be done without any suffering of the patient by its use, a 4 per cent. solution being the strength generally employed. Inject in and around the part; allow five minutes before operating."

The above is all true, unless the last phrase. In our own experience we have not found it advisable—certainly not necessary—to "allow five minutes before operating." We have tried solutions of various proportions, and find but little practical difference. With a two, or four cent. solution used for opening a superficial abscess, you have scarcely time to withdraw the hypodermic needle till the anæsthesia is so complete that a small bistoury or lancet may be thrust through the skin without the slightest pain. If a deep, or long incision is needed, a few minutes delay may be advisable. Even with boils or other painful tumors, the needle, charged with a solution of cocaine, can be painlessly introduced. Press the piston till the solution is seen at the slot at the point of the needle. Let the needle be placed with the slot flat on the cuticle. By pressure cause the point to slightly penetrate the cuticle, not far enough to cause pain. Without change of position, force a half drop or less through the needle, delay a few seconds; and the instrument may be raised to the desired angle, and the needle forced gradually through the skin. On the slightest pain, stop and press a little more on the piston, and in a few seconds complete and painless insertion of the needle can be made.

We have thus used it for opening boils and abscesses, and once for a felon, and in much the same way for the excision of warts, wens, etc.

We have seen it injected in the vicinity of a nerve trunk to arrest neuralgia at the sentient extremities, and failure was the general result. If the irritation is at the root of the nerve of course it can do no good. The pain would be the same if the sentient extremities were absent.

DOCTORS FEAR SEA-SICKNESS.

The New York *Times* states: "Several of the doctors who crossed the ocean, to attend the recent medical conference in Washington, suffered so severely from sea-sickness, that they have not been able to summon sufficient courage to undertake the voyage home, and have decided to locate in this country. Two have settled in Boston, one here, another in Philadelphia, and others, yet undecided, contemplate a Western trip, with the intention of settling down in some growing town out there."—*Medical Register.*

We never had a taste of it, and therefore, cannot charge them with lack of courage; but in view of the desirableness of this country, it is probably they didn't want to go home very badly. An ancient chestnut tells us that in sea-sickness, the victim is at first afraid he will die, but very soon becomes afraid he will not.

A TEST FOR SEWER GAS.

The presence of this poisonous gas in a room may be detected as follows: Saturate unglazed paper with a solution of 1 troy ounce of pure acetate of lead in 8 fluid ounces of rain-water; let it partially dry, then expose in the room suspected of containing sewer gas. The presence of this gas in any considerable quantity soon blackens the test paper.—*Pacific Record.*

"Sewer gas" suggests a conglomeration; but its principle dangerous and disagreeable ingredient is sulphuretted hydrogen. This may originate from various sources, and has been found even in dental offices and other places where it is neither expected nor desired. Cleanliness and ventilation are the natural remedies, approved by science.

HOURS OF FATE.

Dr. Richardson tells us that in the period between midnight and six in the morning the animal vital processes are at their lowest ebb. It is at these times that those who are enfeebled from any cause most frequently die. Physicians often consider these hours as critical, and forewarn anxious friends in respect to them. From time immemorial those who have been accustomed to wait and attend on the sick have noted the hours most anxiously, so that they have been called by our old writers "the hours of fate." In this space of time the influence of the life-giving sun has been longest withdrawn from man, and the hearts that are even the strongest beat with subdued tone. Sleep is heaviest and death is nearest to us all in "the hours of fate."—*Pacific Record.*

A majority are born in these hours, too. When in general practice we kept a minute record of several hundreds of cases, and more than half were between midnight and sunrise. These, too, are the hours in which the teeth are most damaged by incipient decay. Chemical action can do more when vital force is feeble. The poet tells us

> "The night's the mother of the day,"

But all mothers are not kind and complaisant. A pleasant thought in reference to "the coming of the kingdom come" is that "there shall be no night there." Let it come. We all want light.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

To Protect Steel Appliances in the Mouth.—In using steel jack screws the corrosive effect of the oral secretions may be prevented, and the screws nicely lubricated. by immersing them in hot paraffine. This should be done every three or four days.—*Odontographic Jour.*

Aluminum Production.—A new factory has been established at Oldbury, England, and will furnish by the new processes adopted about $1500 worth of metal daily. The reduction in cost of this metal will doubtless lead to an extensive use of it in many directions.—*Phar. Record.*

To Polish Steel.—It is said that a finely polished lusterless surface can be produced in steel by rubbing, after tempering, on a smooth iron surface with some ground oilstone till it is perfectly smooth and even, after which it should be laid on a sheet of paper, and rubbed backward and forward till it acquires a fine dead polish.—*Scientific American.*

Moulding Material.—Dr. H. P. Osborn writes: Having for some years used pulverized pumice stone in which I have made various castings, I take pleasure in recommending it as the best material I have ever found for moulding. For dental purposes mix with a suitable quantity of glycerine. This material is always ready for use and will stand the heat of molten steel.

Toxic Properties of Expired Air.—The experimenter causes expired air to pass through a worm surrounded by ice, and obtains a liquid which, injected into dogs, in doses of gr. $\frac{1}{60}$, causes at once dilatation of the pupils, a marked diminution of respiration, and a sort of paralysis of the limbs. In doses of gr. iij, the animal invariably succumbs in the space of seven hours. —*Le Courrier Méd.*

A New Reagent for Copper.—This is prepared by Aliamet by the addition of pyrogallic acid to a cold saturated solution of sodium sulphite in distilled water. The colorless liquid reacts when added to so small a quantity of copper sulphate as one four-millionth of a gram. The color produced is a blood red, varing in intensity according to the degree of concentration.—*L' Union Pharmaceutique.*

Remedy for Neuralgic Toothache.—A writer in the *Lancet* says: I have not failed once for many years by a single vesication over the fourth and fifth dorsal vertebræ, to put an end at once to the sickness of pregnancy for the whole remaining period, of gestation, no matter at what stage I was consulted. The neuralgic toothache and pruritus pudendi of the puerperal condition yielded as readily, and to one application.—*N. W. Lancet.*

Poisoning by Iodol.—Pallin applied 75 grains of iodol after removing a sequestrum from the clavicle. During the evening of the same day the patient became delirious, and on the following day his temperature was 102.2°, his pulse was 136, small, irregular; he vomited and was apathetic. The urine showed traces of albumen and a weak iodine reaction. Although the dressing was changed immediately, the symptoms lasted four days longer. —*So. Cala. Practitioner.*

Antiseptics.—M. Chamberlain states that the most energetic antiseptics are corrosive sublimate and thymol. Sulphate and acetate of copper and bichromate of potash, although very active, allow vegetations to grow; next to them in power are cassia oil, persulphate of iron, carbolic acid, alum and sulphate of quinine. Boric acid, hyposulphate of soda, salicylate of soda, arsenite of potash, bisulphate of soda, chloride of alumina and chloride of lime are comparatively weak antiseptics.

Salicylic Acid Injurious to the Teeth.—Salicylic acid has repeatedly been recommended as a constituent of mouth washes. According to a dentist of St. Gallen, a sound tooth loses its gloss completely when placed, for a quarter of an hour, in a solution of salicylic acid of the strength of 1 in 1000. Parreidt has shown that salicylic acid dissolves phosphates of calcium, which is the most important constituent of the teeth. Alum is likewise injurious to the teeth, though not to the same degree as salicylic acid.—*Drug. Circular.*

Congestive Headache is treated by Glascow, of St. Louis, by pricking one of the hypertrophied cavernous bodies of the nose and allowing it to bleed freely. Rice, of New York, has had better results by reducing the hypertrophy with the galvano-cautery. In addition to the galvano-cautery, or where it fails, Allen, of Philadelphia, while the patient is in the first stage of ether anæsthesia, explores the nasal cavities thoroughly, abrades or removes loosened mucous membrane,, forcibly separates the septum from the turbinated tissues where they are in contact, and shaves off convexities of the septum where indicated by the existence of nasal obstruction. Prof. Allen, who has done more for rhinology than any other man in America, attaches great importance to this procedure in many cases of nasal catarrh.—*So. Cala. Prac.*

How to Cut a Bottle.—A correspondent of the *Chem. and Drug.*, in describing how to make a percolator, mentions the following method of cutting a bottle: I was first shown how to do it by an ingenius mechanic, and have since seen the same published. Put the bottle on a level foundation and fill up with oil (I use linseed oil, being able to use it in paint afterwards) as far as you wish the line of separation to be. Next get a rod of iron as large as possible, but small enough to go into the mouth of the bottle. Make the iron almost white hot and dip it into the oil. In a very short time a crack will be heard when the iron can be taken out, and the bottle will be found as neatly cut as if with a diamond. Should the bottle be very thick, and the crack not heard in a minute or so, a dash of cold water outside will settle the business.

Salol is a white crystalline powder of a feebly aromatic odor and taste, melting at 42° and burning with a smoky flame, without leaving a residue. It is insoluble in cold, very slightly in hot water, soluble in 10 parts alcohol,

$\frac{1}{3}$ part of ether and easily in chloroform and carbolic acid. The alcoholic solution is colored violet with ferric chloride. If salol is boiled with several times its quantity of soda solution it dissolves, and the solution, when cooled, if acidulated with hydrochloric acid, gives off the odor of phenol, a white mass separating, which, when washed and dissolved in hot water, assumes a bluish-violet color with chloride of iron solution. Salol should not redden moistened blue litmus. Shaken with 50 parts of water and filtered, the filtrate should not give color with ferric chloride, nor with silver nitrate, nor with barium nitrate.—*Pharm. Centrh.*

CARBOLIC ACID AND CAMPHOR.—It would seem that carbolic acid has about as great a solvent power over camphor as has chloroform. Dr. D. B. Cochrane, in *Therapeutic Gazette,* proposes a "carbolate of camphor" by dissolving camphor in 95 per cent. carbolic acid solution to saturation, and states that one part of this acid solution will dissolve three parts of camphor. This compound is claimed to be free from the cauterizing effects of carbolic acid; is a thin, clear, oleaginous fluid; has very little odor, but no taste of carbolic acid, but has a pungent taste of camphor. It mixes readily with vegetable oils, with vaseline and similar bodies, with sulphuric ether, deodorizes iodoform in the proportion of 40 grains to one ounce. Internally, it is given in 10-drop doses; externally, recommended to be mixed with an equal bulk of cotton-seed oil as a dressing for wounds, on which it is applied by gauze or cotton and kept covered. It causes no pain, vesication or suppuration.—*Phar. Record.*

PERMANENT SUPPRESSION OF THE SALIVARY SECRETION.—The patient is a lady aged sixty, very thin and of a nervous temperament, and although not vigorous has always enjoyed fairly good health. She does not consider that the absence of saliva has made any difference to her general health. She gives the following history: About ten years ago, when in apparently good health, with the exception of a nervous shock caused by the news of the sudden death of a friend, she awoke one morning with an intense dryness of the mouth and throat, which prevented her from speaking or swallowing, and caused a sensation of choking. She found relief by constantly sipping cold water; but the distress was so great that for some nights she was unable to sleep. The discomfort gradually abated, but the tongue and mouth have remained perfectly dry ever since. The tongue has now the appearance of a piece of dry raw beef. There are no signs of papillæ on the anterior surface of the tongue, but the circumvallate are distinguishable.—DR. WM. ROWLANDS in *British Med. Journal.*

WATER AT MEALS.—Opinions differ as to the effect of the free ingestion of water at meal times, but the view most generally received is probably that it dilutes the gastric juice and so retards digestion. Apart from the fact that a moderate delay in the process is by no means a disadvantage, as Sir William Roberts has shown in his explanation of the popularity of tea and coffee, it is more than doubtful whether any such effect is in reality produced. When ingested during meals water may do good by washing out the digested food and by exposing the undigested part more thoroughly to the action of the digestive ferments. Pepsin is a catalyptic body, and a given quantity will work almost indefinitely, provided the peptones are removed as they are formed. The good effects of water, drunk freely before meals, has, however, another beneficial result—it washes away the mucus which is secreted by the mucous membrane during intervals of repose, and favors peristalsis of the whole alimentary tract. The membrane thus cleansed is in a much better condition to receive food and convert it into soluble compounds.—*Med. Reg.*

A NEW DEPARTURE IN PRIMARY BATTERIES was brought out in England some time ago. It is known as the Upward battery, in which a gas is used electrolytically instead of liquid chemical solutions, thus dispensing with the use in the cells of acid alkalis and depolarizing solutions. The battery consists of glazed earthenware cells, divided into compartments, containing ordinary carbon plates surrounded by crushed carbon. These divisions alternate with chambers in which the ordinary commercial zinc is placed in blocks. The chambers are filled with plain water, and the compartments containing the carbons are permanently closed with cement. Electricity is generated by chlorine gas, which is admitted to the closed chambers, and circulates from cell to cell, giving the high electro-motive force of 21 volts, and maintaining a constant current of electricity without the use of a depolarizer or any acid or chemicals in the cells. All the attention the battery requires is the addition of a little water about once a week, and the renewal of the zinc about every six months. The manufacture of the chlorine gas is very simple, and can be accomplished by the apparatus provided without danger of escape. It is generated once in twenty-four hours. The current, when generated, is stored in accumulators, and can from there be utilized for lighting lamps, or driving small machines, etc.

FILLINGS FOR CHILDREN'S TEETH.—DR. W. G. A. BONWILL says: The sixth-year molars I rarely fill with other than amalgam, unless the pulp is nearly exposed, when I use oxyphosphate or gutta-percha, with a bridge of tin at the bottom of the cavity to keep off pressure. For proximal decay between temporary molars I use a pointed fissure-bur, leaving a point of contact on the grinding surface, and then, after removing decay, without regard to shape, fill in between from the buccal side with pink gutta-percha rolled into one piece. If the cavity be wet, the working of the gutta-percha in from the centre will make the mass solid. If I were to attempt to make separate amalgam fillings here, the pulp would suffer and decay be sure to recur from want of space. If the proximal and grinding surfaces are both involved, the pulp has usually by this time disappeared, and I combine all the surfaces and use amalgam. I always tap such pulpless cases of temporary teeth. I would fill the temporary incisors with amalgam; never with gold, and not often with the oxyphosphates or gutta-percha. In large proximal cavities through to the grinding surfaces, where there is no chance of shaping the cavity for amalgam, I invariably pack in pink gutta-percha in one piece. This can be eaten upon, and renewed or patched easily. We cannot always contour such places with amalgam, and the gutta-percha arrests and prevents decay, and leaves no chance for accumulation of food. The perfect adaptibility of gutta-percha to cavities even with moist decay causes it to save when nothing else will. The quality of expansion from constant mastication and 98° heat keeps it against the walls, its self-adaptation rendering it without an equal in temporary teeth. I have seen fillings of it rolling around in the cavity where apparently no further decay occurred.—*Dental Cosmos.*

Medicamental Incompatibility.—It is dangerous to mix alkaloids with alkaline bases or salts, as in the following example:

Sulphate of strychnine 1 grain, elixir composed of bromine and chloral 8 ounces; one teaspoonful morning and night.

A crystalline precipitate is deposited, formed in a great measure by strychnine, taking the shape of an insoluble bromide of strychnine. By neglecting energetic agitation of the bottle, the last dose will produce disastrous effects.

The same holds good for the following prescription: Sulphate of morphia, 2 grains, liquor of acetate of ammonia, aqua dest., sir. simple., 2 drachms.

If, after the acetic acid has become neutralized, there remains an excess of carbonate of ammonia, the alkaloid, will be precipitated as before.

Simultaneous use of calomel and iodide of potassium has the effect of causing a double decomposition which takes place in the stomach and induces the formation of an irritating mercurial compound.

The following formula may give occasion to a sudden development of gas and to an explosion: Carbonate of ammonia, 2 scrup.; sirup of scilla and sirup of senega aa, 1 ounce.

The acetic acid combines with the ammonia, and the carbonic acid is set free.

When the prescribed substances have a tendency by their mixture to produce insoluble compounds, they ought to be mixed in a way to render the precipitate resulting from them, of easy dissipation by means of agitation. In the formula: Perchloride of iron 5 scrup., mucilage of gum arab. 1 ounce, aqu. dest. 4 ounces, the iron and the mucilage have to be diluted together before proceeding to complete mixture.

To avoid precipitation of iodine in the water which is to receive tincture of iodine, it is necessary previously to add iodide of potassium to the tincture.

In the prescription: Chlorate of potassa 1 scrup., hydrochloric acid 2 drachms, aqu. dest. 10 ounces; there will be formed free chlorine by adding the chlorate to the acid, and there will be formed free chloric acid by first dissolving the chlorate of potassa in water.—*Journal de Medicine de Paris.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Kansas State Dental Association at Topeka, Tuesday, April 24, 1888.

Iowa State Dental Society at Iowa City, Tuesday, May 1,1888.

Illinois State Dental Society at Cairo, Tuesday, May 8, 1888.

Northern Ohio Dental Association at Painesville, Tuesday, May 8, 1888.

Nebraska State Dental Society at Beatrice, Tuesday, May 15, 1888.

Mad River Dental Society at Dayton, O., Tuesday, May 19. 1888.

Indiana State Dental Society holds its next annual meeting at Terre Haute, Tuesday, June 26, 1888.

TO OFFICERS OF DENTAL SOCIETIES.

Several times the date of meeting of various societies has been changed, and no notice of it sent to us. In consequence the dates as they appeared in The Ohio Journal were wrong, but having no notice of a change we were not responsible for the errors. Such notices if not corrected are confusing and are instrumental in keeping many from the meetings. We give gratuitous space for announcements and programs of society meetings; and in consideration of this fact, we hope the officers of dental societies will hereafter keep us fully posted, and thus avert much annoyance and ill feeling.

LAKE ERIE DENTAL ASSOCIATION.

The twenty-fifth annual meeting (or quarter century) of the Lake Erie Dental Association will be held in Meadville, Pa., beginning on the first Tuesday in May, (1st,) 1888, and lasting four days. Clinics will be held during the meeting. It is the intention of the Executive Committee to make this the most interesting and instructive dental meeting that has ever been held in Western Pennsylvania. Members of the profession are cordially invited to be present.

C. D. Elliott, *Sec'y*,
Franklin, Pa.

ILLINOIS STATE DENTAL SOCIETY.

The twenty-fourth annual meeting of the Illinois State Dental Society will be held at Cairo, beginning Tuesday, May 8th, and continuing four days. This point has been selected because convenient for the dentists of Southern Illinois, with the hope that many who have not hitherto met with us will do so this year; also for the further reason that it is easy of access to those living in other States, south, east and west, to all of whom a cordial invitation is extended. An excellent program has been arranged, with clinics as a special feature.

GARRETT NEWKIRK, *Sec'y.* C. B. ROHLAND, *Pres't.*

NORTHERN OHIO DENTAL ASSOCIATION,

WILL meet at Painesville, Tuesday, May 8, 1888, and continue three days.

Subjects for Discussion.—1. Therapeutical Action of Obtundents. Paper by Dr. W. H. Whitslar, Youngstown; opened by Drs. F. Lyder, Akron, and J. E. Robinson, Cleveland.

2. Detrimental Effect on the Development of the Osseous System of The Youth by the Present Method of Education. Paper by Dr. S. B. Dewey, Cleveland; opened by Drs. L. Buffett and P. H. Keese, Cleveland.

3. Labial and Palatine Cavities—Cause, Mode of Preparation, and With What to Fill them. Paper by Dr. H. F. Harvey; opened by Drs. L. G. Meyer, Cleveland, and T. C. Leiter, Wadsworth.

A number of voluntary papers are expected.

Clinics.—Operation on Labial Cavity by Dr. Chas. R. Butler, Cleveland. Crown, by Dr. J. R. Owens, Cleveland.

A special effort should be made to attend this meeting, and it is hoped that many of the dentists throughout Northern Ohio will be present.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

A MEETING of the State Board of Dental Examiners will be held at the St. Charles Hotel, Cairo, Ill., on Monday the 14th day of May, at 11 o'clock A. M., and continue in session for three days.

All parties desiring to obtain license to practice in this State, or having other business that requires the action of the Board, will please govern themselves accordingly.

CHARLES R. E. KOCH,
Sec'y State Board of Dental Ex.

OHIO VALLEY DENTAL SOCIETY.

The Ohio Valley Dental Society which was organized at Steubenville, December 16, 1887, held its second quarterly meeting at Wheeling, W. Va., at the office of Dr. Chas. E. Mason, on the first Monday of April, 1888.

The following program was observed:

1. Essay—Gold Filling, with Clinic. By Dr. Chas. E. Mason. Discussion on subject opened by Dr. John Pearce.
2. Essay—Alveolar Abscess. By Dr. H. H. Harrison. Discussion on subject opened by Dr. Wm. H. Hall.
3. Essay—Extraction of Deciduous Teeth. By Dr. J.G. Parr.

F. S. Maxwell, *Sec'y.* H. H. Harrison, *Pres't.*

OHIO COLLEGE OF DENTAL SURGERY.

The forty-second annual commencement of the Ohio College of Dental Surgery, was held at College Hall, Cincinnati, O., Wednesday, March 7, 1888. The following is a list of graduates:

Ohio.—D. S. Anderson, H. J. Bosart, E. D. Broadwell, H. W. Cleland, D. M. Clement, Mrs. Jessie Dillon, M. H. Evans, A. B. Fletcher, H. E. Harlan, F. Y. Herbert, J. W. Hillman, E. D. Hinkley, C. B. Hussey, I. F. Hussey, C. G. Lockwood, H. H. Robinson, C. A. Schuchardt, J. B. Schunck, H. T. Smith, Mrs. Z. V. Swift, T. D. St. John, J. P. Tudor, S. M. Ulrey, Edwin Waddel, W. W. Wallace. Indiana.—N. B. Hartwell, M. A. Menges, B. C. Reid, E. J. Ward. Kentucky.—J. W. Cartmell, C. B. Clark, J. F. Rees, W. C. Shankland. Illinois.—O. T. Hanson, O. S. Mills, A. H. Rainey. Kansas.—B. L. Shobe, R. H. Updegraff. Missouri.—J. A. Henning, W. E. Scott. Wisconsin.—W. E. Gochenour, R. D. Rood. Canada.—W. A. Windell. Iowa.—J. F. Hardman. Minnesota.—R. B. Foster. Pennsylvania.—T. H. Sexton.

Prizes were awarded as follows:

1st prize.—For the best general examination, H. T. Smith, O.; 2nd prize.—For the best in operative dentistry, I. F. Hussey, O.; 3rd prize.—For the best in mechanical dentistry, W. W. Wallace, O.

STATE UNIVERSITY OF IOWA.

The sixth annual commencement of the Dental Department of the State University of Iowa occurred on March 5, 1888. The graduates were as follows:

A. E. Anger, Iowa; J. E. Babcock, Illinois; C. P. Beyer, Iowa; F. T. Breene, Iowa; C. W. Cope, Iowa; E. S. Dawson, Iowa; H. D. Hinkley, Iowa; O. A. King, Iowa; J. A. Lovelady, Iowa; J. A. Leonard, Iowa; H. V. McGregor, Iowa; M. S. Overfield, Iowa; C. S. Percival, Iowa; A. B. Palmer, Iowa; A. L. Punton, Iowa; L. E. Roe, Nebraska; A. L. Rist, Iowa; J. E. Swain, Iowa; C. H. Sippel, Iowa; C. S. Searles, Iowa.

THE INDIANA DENTAL LAW OF 1887

Has just been tested. George Wilkins, of Marion, Grant Co., was indicted by the Grand Jury and tried and convicted. The Circuit Judge held the law constitutional. Wilkins appealed. Yesterday the Supreme Court decided that "The act of March 7, 1887, regulating dentistry does not conflict with the constitution in any respect and is valid." I believe this is the first case before the Supreme Court of any State. The law is doing great good and this will increase its power for good.

KNIGHTSTOWN, IND., March 3, 1888. M. H. C.

Books and Pamphlets.

BEECHER'S DENTAL DIRECTORY OF THE UNITED STATES, 1888. M. P. BEECHER, Compiler. Beecher & Co. Publishers, 42 Third Avenue, New York City.

The object of this publication is a good one and difficult to carry out. If we may judge the whole by the errors noted in that part devoted to the portion of the country with which we are familiar, it is very unreliable, full of errors and several years behind in revision.

In the list of journals several are included that have ceased to exist or have changed name or address. The OHIO JOURNAL for instance more than a year ago (Jan. 1887), dropped the word *State* from its title and never was edited by Geo. Watts.

It is a long time since "Sal" of the *Register* had his office on 9th street, Cincinnati. In other places in Ohio are omissions of dentists who have been located in the same place five to ten years.

CHARTER (State Laws) and Code of the Dental Society of the State of N.Y.

The Cincinnati Medical Journal is the new name of M. A. Spencer & Co.'s journal. It still shows traces of its former dental partnership, "C. M. W." doing the book reviews in the February number.

Our Aftermath.

DIPLOMAS are mere trade protection labels, that the diplomate is capable of doing his technical work properly.—*British Journal of Dental Science.*

CHEEKY!—A Boston surgeon has extracted the nerves from a man's cheek. What business-house the patient intends to serve as commercial traveller is not stated.

USEFUL IN RHEUMATISM.—A foreign medical magazine says that dimethylphenyloxplyragol is useful in the treatment of rheumatism. The sufferer can attach a handle to the word and saw off the afflicted member with it.

DR. W. H. ATKINSON, of New York, attended the meeting of the Mississippi Valley Association, Cincinnati, March 8th. As usual he "took off his coat, kissed his hand to his audience, and waded into" everybody and everything and didn't miss the mark very far.

DO NOT LOSE YOUR INDIVIDUALITY.—Never allow the fear of professional criticism to rob you of your manhood; read, speak, write and work; allow no idle moments to absorb your days, and you will move toward perfection in dentistry and success in life.—*R. R. Vaughn.*

THE RICH AND THE POOR.—A rich, titled lady drove up to the door of the great physician, Sir James Simpson, and sent word for him to come out. His reply was, "Tell the Duchess she must come in and wait her turn. I am now busy with a fish-woman." Go thou, and do likewise.

DR. ARTHUR G. ROSE, of Cincinnati, Recording Secretary of the Mississippi Valley Association of Dental Surgeons, his many friends will regret to learn is suffering from nervous prostration brought on by overwork. While in this condition and about to go South for rest on March 15th, in a fit of temporary insanity, he attempted suicide. It is thought he will soon be himself again.

A MISFIT.—"I'll never try again to surprise anybody with a New Year's present," remarked Bill Yerger to his friend Tommy Peterby.

"Why not?" asked Tommy.

"Because I bought pa a set of false teeth on the sly, and they don't fit him."—*Texas Siftings.*

THE STRICTEST CONFIDENCE.—Dentist: Oh, madame may be perfectly easy in her mind. We dental surgeons always make a point of observing the strictest confidence. Only last week, for instance, I supplied Countess Pampmann and Baroness Borgheim with a complete set each, and not a soul living knows a word about it.—*Munchener Blatter.*

HIPPOCRATES employed a variety of medicines which, even at present times, are continually employed and held in high favor. Besides iron rust and hellebore, he was possessed of the knowledge of elaterium, colocynth, scammony, cantharides, asafœtida, papaver somniferum, mandragora, and antimony. As prophylactics he made use of wine, vinegar, and kindred articles, employed them for lotions and enemata, and for the same purpose they are still in use, notwithstanding the fact that he is almost forgotten.—*Pac. Record.*

THIS from the *Southern Dental Journal* is suggestive: "MARRIED, at St. Philips Church, Charleston, S. C., on the afternoon of January 25th, by Rev. John Johnson, Dr. Louis P. Dotterer to Elisabeth Frost, daughter of the late Dr. J. F. M. Geddings."

We give up in despair—almost freezing here; but if "Dot" with all of his vim and industry, must succumb to the Frost in South Carolina, it is not worth while to go south to keep warm. The *Journal* kindly tells us whose daughter Elisabeth is; and now we know whose *Dotterer* she is. Long life and happiness to the Dotterers! Would throw away our old shoes after them for good luck, if we had anything else to wear.

MUTUAL CONFIDENCE.—Judge (to the accused)—Seppel, if you admit that you owe your doctor twenty marks, and you have the money, why don't you pay him?

Seppel.—I am perfectly willing to pay the doctor, but first he should give me a receipt for the money, for he is not a reliable man. If I give him the money before he gives the receipt, then he won't sign the receipt, and afterward he will want the money again.

Judge.—Doctor, why won't you sign the receipt?

Doctor.—I will tell your Honor. Seppel is not a reliable man. If I give him a receipt, he won't pay me at all, and if then I prosecute him, he will show the receipted bill in Court.—*Fliegende Blatter.—Pac. Rec.*

THE
OHIO JOURNAL
—OF—
DENTAL SCIENCE.

Vol. VIII. MAY, 1888. No. 5.

Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

A NEW MATRIX.

BY DR. HENRY BARNES, CLEVELAND, O.

Tinners' tin, first suggested by Dr. H. F. Harvey, of Cleveland, is probably the best metal for a matrix, because it is pliable, reflects light, is inexpensive, and can be cut into any desired shape or form at a moment's notice. This to those who have used the different forms will be fully appreciated. The matrix I shall describe meets the needs of the majority of cases better than any form heretofore tried.

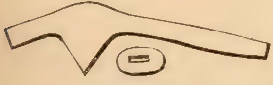
Fig. 1.

Take a piece of taggers' tin, 36–38 gauge, long enough to pass around a molar or bicuspid tooth and lap, cut with scissors (curved the best) into a shape like Fig. 1, and with a pair of crown-shaping forceps, contour, bend and pass around the tooth to be filled, not allowing the narrow band to pass beyond the knuckeling of the adjoining teeth, and with a pair of flat pliers pull on the two ends, at the same time pressing them together so that the little washer may be placed over them, and then turned back upon themselves, thus locking the band. Now with a large burnisher force the upper lip over onto the crown of the approximating tooth, placing a wedge between the tooth and matrix so as to bring it to the floor or crevex wall of the cavity as in Fig. 2. Fig. 3 is a double matrix for cases where there is a posterior and anterior cavity, Fig. 4. This form of matrix is easily applied and does not hurt the patient by pressure upon the gum from a false blow; it has sufficient elasticity to permit of a perfect contour, and can be used without previous separating, while it does away with much finishing.

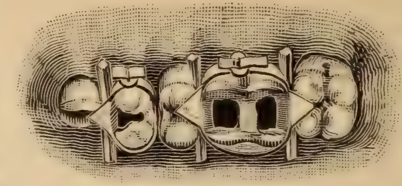

Fig. 2. Fig. 4.

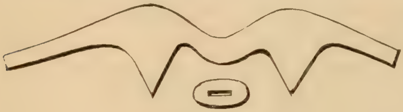

Fig. 3.

DENTISTRY IN COURT.

BY E. H. RAFFENSPERGER, D.D.S., MARION, OHIO.

Probably the idea that a dentist ever has to have recourse to a court of justice, may seem absurd to many of the readers of the Journal, but it so happens nevertheless. And having attended several dental cases, in the capacity of a witness, I will endeavor to describe some of them. Usually the dentist is on hand with his lawyer and the "other dentist," as a witness. And generally the other party is there too with his legal advisor, and his "sisters, cousins, and his aunts," for his witnesses. After the customary routine of "opening the case," each party sails in, and the way the lawyers talk dentistry makes one turn green with envy; and the one which does the worst prevaricating generally comes out on top.

The first case I will mention, is where the plaintiff, a dentist, brought suit against a party for non-payment for a set of artificial teeth. In this case, salivary calculus proved too much for the defendant's lawyer.

The defendant claimed that the teeth in question could not be worn, that he had the teeth for over a year, and generally carried them in his vest pocket. That he could not keep them in the mouth as they would fall out, and indeed the whole testimony was made up by telling the faults of the teeth, which, strange to say, had never been thought of until asked for payment.

A view of the teeth, however, told a different story. They were fairly covered with a heavy deposit of tartar which showed conclusively that the teeth must have been in the mouth a greater part of the time, and that the defendant's testimony did not hold together very well. And on the strength of the fact, of this tartar being found on the teeth, the jury after being out only a few moments, brought in a verdict in favor of the plaintiff.

Now from the evidence of the defendant, I can only account for the tartar being on the teeth in one way: he claimed he carried the teeth in the vest pocket most of the time, but the plaintiff in giving a brief discourse on tartar, to the jury, informed them (on whose authority I do not know) that tartar was formed and secreted by the stomach (?) so, owing to the proximity of the vest pocket to the stomach, the tartar must have found its way through the tissues of the defendant's person and clothing, from the stomach to the vest pocket containing the teeth. So strong is the affinity of tartar for the teeth.

In the second case, the patient happened to have the "bulge" on the dentist, but the argument presented by the dentist's lawyer, would have been a credit to any Philadelphia follower of Blackstone. The facts were as follows: The dentist sued the patient for non-payment for a set of teeth. Patient claimed teeth would not fit, "fell down in the mouth and gagged her"; said when she first got the teeth the dentist would not "fit" them in her mouth, but simply handed them to her, and told her to fit them in her mouth herself. Now this was the "clincher" to her case, but the dentist's lawyer in his argument, claimed that as the patient had not paid for the teeth, the dentist was under no obligations to fit the teeth in the mouth, and he had been employed simply to make a set of teeth and not to perform any other service. His Honor, however, failed to see it in such a light, and rendered a decision in favor of the patient.

A SYSTEM OF EXTRACTING THE LOWER TEETH.

BY GEORGE H. WILSON, D.D.S., PAINESVILLE, OHIO.

About the year 1830 Dr. Snell improved the forceps then in use, by adding a nib and two concave surfaces to each of the two beaks, of the lower molar forceps. Soon after Prof. Harris added a lateral curve to the handles; so, as he said, one instrument would answer for both sides.

About the year 1876, Prof. Watling presented his improvements, which, we believe, constitute the highest ideal of lower molar forceps at the present time, and will be more generally adopted as the profession becomes better acquainted with them. Dr. Watling's improvements consist in curving and turning the handles upward, retaining the lateral curve of Dr. Harris, with the beaks so curved downward as to bring the line of attachment to the tooth and the line of traction nearly parallel.

The advantages gained by these changes are two. 1st, The force is applied from the arm and shoulder rather than from the wrist as with the Harris forceps, or the straight handled, right angled beaks of the old forms. 2nd, The position of the operator at the back of and over his patient, either to the right or left as may be necessary to bring his line of vision in the long axis of the tooth to be removed, enables him more clearly to see what he is doing; also to perfectly support the jaw with the left hand.

Method of supporting the jaw.—For the right side: Place the palm of the left hand over the symphysis of the jaw, with the index or fore-finger resting upon the buccal, and the thumb upon the lingual surface of the body, the remaining fingers grasping firmly the jaw outside of the mouth. This position gives not only perfect support, but perfect control of the tongue and cheek, so that they will not obstruct the vision of the operator.

For the left side: The palm of the left hand again grasps the symphysis of the jaw, the index or fore-finger only is placed in the mouth, on the outside of the arch and against the buccinator muscle to control the cheek, the remaining fingers again grasping the jaw; the tongue is controlled with the forceps by placing the lingual beak in position first.

Forms of the Watling lower forceps.—The regular molar forceps is made very heavy and strong, and especially so in the handles near the joints, so as to avoid springing. The grasp upon the tooth is very firm, and one inexperienced in the use of this instrument should be very careful not to use the exertion that he would with the old forms, or he will probably crush the tooth. After the instrument is properly placed in position, the operator can devote his whole attention to breaking up the attachments and removing the tooth, as he would be inexcusably careless in placing his instrument to have it "slip off."

The "Maynard" or "cow-horn" beaks have also been adapted to the same handles. One pair for the single rooted teeth, retaining the same curves of handles and beaks, suited only to its work. The three forms constitute the ones now upon the market.

The writer of this paper in his practice, has felt the want of other forms for the removal of roots, which in many cases are the most difficult, requiring the best instruments, and the most skillful operating.

The three forms have been the writer's reliance in all ordinary cases of extracting, hence the line in which, what skill he has, was possessed; but in all difficult root cases he was compelled to resort to those forms of forceps least suited to his hands. To overcome this difficulty he has recently had made for him two pair. One has long slim beaks $\frac{1}{12}$-inch lateral grasp upon the root, and retains this thinness nearly the whole length of the beaks to facilitate their passage between crowded teeth, yet sufficiently strong to permit one to cut through thin portions of the alveolar process. The beaks diverge from the end toward the joints so that in very badly crowded teeth they would reach over any of the ten anterior ones, and permit the root to be loosened from its socket without endangering the enamel of the adjacent teeth.

The other pair has the Parmly, or alveolar beaks, and is intended for heavy roots and extensive cutting of the alveolar process. Each of the forceps has an enlargement on the end of the straighter handle to protect the palm of the hand in forcing the instrument in place. With these five instruments and one pair of straight handled forceps, with the beaks at whatever angle may suit the individual operator, we believe the possessor is as well equipped as he can be with forceps.

Mode of using the forceps.—Incline the chair backward as for extracting the superior teeth; lower the base of the chair, or with a stool elevate yourself so that the head just above the occiput, will rest against the lower part of the epigastrium .Assuming the positions with the body and left hand as described above, grasp the forceps suited to the case, in the right hand, with the longer handle resting in the palm, the first three fingers grasping the outer surface of the shorter handle, and the thumb and little finger resting upon the inner surface of the same, which will place the instrument under perfect control. Carefully adjust the instrument to the tooth and loosen the same by an inward and outward or lateral motion, when it can be easily lifted from its socket. With the molars the simple rolling of the wrist inward will greatly facilitate the operation. One unaccustomed to this instrument will be surprised at the ease with which this backward rolling, or unhooking motion, can be given the tooth, a motion that is very difficult with the straight handled instruments. In most cases of the *dentes sapientiæ* it is admirably adapted to the work; but there are a few cases of a rigid small orifice, inability to open the mouth wide, and certain malpositions, to which this crooked instrument is not adapted, when the straight handled instrument, referred to above, will be found of excellent service. In all cases of the molars where there is a sufficient portion of the crown left to enable the operator to grasp it with the double concave beaks he should do so; but where the walls are too frail, the Maynard or cow-horn beaks should be resorted to, which will either lift the tooth from its socket, by closing the instrument, or separate, and at the same time loosen the roots, when they can be easily removed with the proper root forceps.

It is unnecessary to enter specially into the mode of using the others, as the shape of their beaks implies their use. The advantages of these instruments are, that they all have practically the same handle, only heavier or lighter to be in proper ratio to their beaks, thus enabling the operator to have the same advantage of position, power in his instrument, and experience in the use of the same, in the most difficult root case as in the easiest extraction, because the only difference in his five instruments is in the beaks, which are adapted to their especial work.

Lancing the gum.—We would suggest that the operator in the use of these forceps would follow his usual method. The method pursued by the writer is to lance only where the instrument is to be passed far below the free margin of the gum, and then on both sides in a line parallel with the long axis of the root or tooth.

Difficult extractions.—There are cases continually arising that tax the skill of the most ingenious. When the writer has one of those cases, which in common parlance "are grown fast to the jaw" or "cannot be pulled," he does not hesitate to crush the tooth down, (and it must be a "terror" that the Watling lower molar forceps will not crush,) and then remove the roots with the alveolar beaks.

It sometimes happens that one or the other of the roots of a molar tooth will be broken down in its socket so far that one does not feel justified in cutting the process as it would be necessay with the forceps, then if in our judgment we think it best to remove it, and it cannot be displaced by passing a spoon-shaped excavator between it and the alveolar walls, we have resort to two instruments in addition to our regular line of elevators. These instruments differ only in size, and are made from old half-inch handled, hand pluggers. The larger is made from a plugger the end of which was about the size of No. 30 standard wire gauge; by bending it at an angle of about 45° and sharpening it to a hexagonal point. The smaller is about half this size. The instrument is used by placing it in the alveolus of the removed root and running it through the porous septum, when the root can be loosened and removed by whatever method is best suited to the individual case.

MY EXPERIENCE WITH THE DENTAL PULP.

BY DR. WM. A. PEASE, DAYTON, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

More than fifty years ago, when I became a dentist, it was the practice when we wished to insert a pivot tooth, now called a crown, and when the pulp became exposed, to destroy it by thrusting a properly prepared hickory splint, or oftener a flexible steel instrument as deeply into it as it would go, turn it rapidly around and therewith excise the pulp. It was also the custom when necessary to destroy the pulp before plugging, to open the cavity, especially on the proximal face, and then use a hickory splint in the same way, but oftener a piece of East India bamboo, sawed off at each joint, was split off the required size, properly fitted, often soaked in water a few minutes to make it more tough and flexible, always leaving the outside of the bamboo uncut, as being the least liable to break, and always in an approximate cavity turning that toward the back side before thrusting it down. It was a barbarous practice tempered with a full equivalent of mercy, as there were no afterclaps; no obstreperous flux to that point, causing tumefaction, a signal that nature had been outraged, to end when she had established a natural drainage tube, and an interrupted series of greater or lesser tumefactions and paroxysms of pain. All of these were then unknown; people enjoyed their pivot teeth; often fastened by a pivot of bamboo, the outside never removed, and that always placed on the lingual face of the root as being the least liable to break. They were fully as enduring as the more complicated crowns of to-day, and then getting a fee that enabled us to adjust the crown to the root, and obliged to make many of our instruments, we brought to it much manual and artistic skill. They were nearly, and often, fully as cleanly as the crowns of to-day, resting on an intervening phosphatic layer, which are often sprung soon after insertion enough to admit more or less of uncleanliness. Fitted as they were then, with an intervening layer of phosphates of to-day, I have no hesitancy in saying they were and would be more enduring than the average crowns as now used, and they were vastly easier to replace in case of an accident. I have positive knowledge that many crowns I inserted lasted more than twenty years; but these were subsequent and are mentioned only to show that careful manipulation under the old methods produced good results. Then everything was secret; there were no dental journals, no colleges, every practitioner guarded his methods, many of them elaborated from his inner consciousness, and it was not long before I discovered that others had modes of practice in some respects superior to mine, which were so valuable they would not part with them for love nor money. In vain I tried to fill teeth, held in a vise, equal to theirs. Their methods I must have, so I dug out a filling, went a long distance, found the dentist, was very inquisitive and ignorant and very nervous, made him explain his method, show his instruments to see if there was hurt in them, and at last in the chair, I held his hand mirror and saw his operation. This was several times repeated with others. Once I met subsequently one of them at a dental meeting, and when introduced watched to see any sign of recognition, but he had a polite control over tongue and face, or he did not recollect me.

It was some time before I learned the use of arsenious acid. Then the pulps were deadened, but not removed; they, with whatever of arsenic they had absorbed, were sealed in, and so far as I now recollect the percentage of ulcerations was not materially greater than in the average complicated operations of to-day; but they were greater than where the pulp was destroyed by mechanical means and immediately removed, in order to set a crown. Well do I remember the first complaint that an incisor tooth had become pink. There it was, immediately over the pulp, as near as the two different structures would admit, a bony echymosis; but I soon found if the cavity was opened and the pulp removed the color disappeared. It is now a question with me whether the rather liberal use of arsenic then caused more to be absorbed and to be sealed in with the pulp to ultimately extend through the foramen, or ulceration was caused by germs reaching it through the circulation. It is probably the first, as arsenic would not be very palatable to germs, and Fowler's solution might now in careful hands be valuable. It should be known that Fowler's solution by heat can be indefinitely strengthened by taking up more arsenic and still remain clear and will easily penetrate where the paste will not reach, and that a small drop of eight per cent. cocaine applied directly to the pulp will, after five minutes, so numb it that the arsenic will get a painless hold of it. It was some years later that Dr. Solyman Brown published, in an illustrated article in the first American dental journal, his mode of practice. That journal cost one dollar and a quarter a number. I have it yet; it cost to get modes of practice then, and he was censured for giving the secret away. From the beginning there were teeth suitable for a crown, in which the nerve was dead. After these had been cut down and drilled there was little space left for germs; but it was the custom to run a smaller drill further down to make them less offensive; into which a little cotton dipped in wood creosote was placed, and when the pivot was thrust in, a part was pressed through the foramen. It should be remembered that the creosote of commerce and carbolic acid are quite modern. I still keep wood creosote by me; coming down to modern practice I have tried the various remedies or germicidal root dressings, but still think the one I have used for several years the best, the formula of which is: ℞. Potass. Iodide, 1 oz.; Aqua, 1 oz. ft. sol. After an offensive tooth has been prepared and the nerve canal opened as far as practical, a broach may be pushed down, the dam being on or other means employed to keep the cavity from being flooded, when a drop of that solution may be placed in an inferior tooth, and almost instantly the patient will start from a slight pain, the fluid having passed the foramen. Here a pretty strong solution of iodide and potash as limpid and clear as water, passes without trouble to the operator through the entire canal and is absorbed by capilliary attraction into the more or less empty spaces of the fibrils into the cementum, and if the buccal roots of the superior molars are opened as far as convenient and a little cotton wet with it is pressed in, and an instrument a little larger than the cavity is pressed on it, most of the canals will be filled either by pressure or absorption. In addition to this, if desired, carbolic acid or the nasty and offensive smelling iodoform can be used. In regard to iodoform, if confined with a cork it is apt to shrink, and the iodine to evaporate and to be of very uncertain strength, while a solution of potash and iodine loses little or nothing. Much more might be said in favor of this, how the potash unites with animal matter, and iodine stimulates the absorbent, but these were discussed in the *Dental Register* several years since.

Thus far the salient points in the treatment of the dental pulp and its remains, have been noticed; a few words as to the modern treatment must suffice. This may be divided into two parts, viz.: When the pulp has been suddenly and unexpectedly exposed in operating, and where it has been encroached upon by disease until it has become irritable, and has ached occasionally for a longer or shorter time. The oxychlorides generally killed the pulp; the phosphates were a little better, but both were irritants, and it seemed to me irritants were not indicated for so sensitive an organ as the dental nerve. Both were moderate conductors, and where it survived there would be often periods of pain from thermal change or other cause for months. My first departure was for a young lady æt. 16, whose sixth year molar was aching and had occasionally ached before—crown cavity, no periosteal complication. The cavity was prepared, point of exposure located; means adopted to prevent flooding, when a drop of wood creosote was placed on the spot, then a suitable quantity of creta prep. was carefully placed over the point of exposure, a cap of tea-lead placed on that, and the cavity filled with amalgam, and the pain ceased, and for several years there was no recurrence. My present practice is to touch the point of exposure with a little of an eight per cent. of cocaine; wait till it begins to take effect, then place on that a little morphine in substance and finish as before. The cocaine subdues irritation for an indefinite time, and the more persistent morphine quiets it for weeks. Both are strong remedies and must be used with caution, the cocaine being a non-irritant. It has always seemed unphilosophical to me to use an irritant on so sensitive a tissue as the dental pulp. Creta preparata comes the nearest to my ideal of any substance, a non-conductor, non-irritant; merely homogeneous with the walls of the tooth, it is better in many respects than the same quality of phosphate of lime. It is sometimes a little difficult to adapt to a proximal cavity. My method is this: Prepare cavity and locate point to be capped; touch that with a little eight per cent. cocaine, keep otherwise dry, then cut a piece of tea-lead to suit the place, take a piece of bleached shellac, warm a globe ended instrument, press it on the lead and the gum will adhere to it; moisten the place with cocaine or a little carbolic acid so the chalk will adhere to it and be a little pasty, on this place a little morphine in substance and apply, then touch a warm instrument to the place over the gum under the lead and it will adhere if the tooth is dry, then press very lightly the edges of the lead to the walls of the cavity, when the tooth may be filled with amalgam, or the cap can be covered with phosphate and filled with gold. Sometimes it will be more convenient to apply the paste to the spot with a delicate spatula and then cover with the lead, the space between teeth being small. When a large cavity is to be filled with gold, phosphate, or better still amalgam, it should be filled over the cap and pressed thoroughly to the walls and base, except over the point of exposure, where it should be lightly touched, or arched. If filled wholly with amalgam then the chalk will not yield under pressure, and the filling settle and leak. I have become so accustomed to this practice that I take great risks.

DISCUSSION.

Dr. Watt: Dr. Pease speaks of iodide of potassium. While it remains potassium-iodide it does no more good than so much water; but it is a loose combination and is easily disengaged; the free iodine acts along the tract and kills the "bugs." This is why iodide of potassium is so good a blood purifier. It is a wonderfully perfect chemical mixture on account of its possessing so feeble a combination.

Dr. Wright: I would like to ask Dr. Watt if iodide of potassium acts in this way when topically applied?

Dr. Watt: Yes; it is disengaged as soon as it comes in contact with animal matter.

AN ANÆSTHETIC CASE IN PRACTICE.

BY J. W. JAY, M.D., D.D.S., RICHMOND, IND.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

On the tenth of last November, a lady came into my office and asked me if I could extract a tooth for her. I told her I thought I could. She then informed me that Dr. Kelsey, one of the prominent young physicians, would be in presently to administer ether to her. He soon came, and she took her seat in the chair. In appearance, she was a lady in possession of rather more than ordinary health, and I should think would weigh about 130 pounds. Placing the chair at an angle of about 45 degrees, and supposing that the doctor had made all the necessary examinations, in regard to her health at their previous interview, in reference to her taking ether, I asked her no questions. On examining her mouth, I found two teeth to remove instead of one, and told the doctor I was ready. He immediately began the administration of the ether, and in just three minutes from the first inhalation, the teeth were out, extracted while she was under the primary effects of the ether. Still retaining my position by her side, and Dr. Kelsey standing in front of the chair, both of us expecting, of course, that in a few minutes, at the farthest, she would open her eyes and show symptoms of returning consciousness. But in this we were doomed to disappointment. Up to this point her breathing was natural and pulse normal. Very soon, however, to our dismay, her breathing grew shorter, and shorter, and then ceased altogether. I sprang to her and began the process of artificial respiration, by standing behind the chair and a little above her, and placing my hands, one under each of her breasts, at the margin of the short ribs, and pressing upward, and then relaxing the pressure, alternately. Keeping up this process for a few seconds without any appreciable benefit, the doctor hurriedly suggested that we lay her on the floor, and we lost no time in complying with his suggestion. As soon as she was in this position, the doctor proceeded with the artificial respiration without any apparent improvement. Her eyes were closed from the start, and she was as limp as a rag, and her countenance by this time had assumed the livid hue of death. We saw at once that something must be done and done quickly. So I gathered her by the legs and lifted her up, her head hanging down, and her legs resting one on each of my shoulders. All this time she had not breathed once, and I distinctly remember of wondering to myself, how it could be possible for any one to be so long without drawing a single breath and live, for it seemed to me an age; therefore, I said to the doctor, it is no use, she is dead.

He placed his ear to her chest, said her heart still beats. Then, said I, we will work as long as the heart continues to act. At this critical moment she showed manifestations of returning life by a feeble respiration accompanied with a suppressed groan; and at a long interval another, and then another. I held her in the inverted position until her breathing seemed to be thoroughly established, which produced a sense of relief to us both, more easily imagined than described. We placed her again in a horizontal position on the floor, and, of course, thought that now she surely was all right. The doctor exclaimed, "My God, that is the closest call I ever had."

But how soon were our cherished hopes frustrated. In a few seconds after we had laid her down, we had a repetition of the same condition. I took her again by the legs and held her in an inverted position as before. This time we were sure that she had gone to that "bourne whence no traveler ever returns." But by good luck, combined with our efforts, the doctor doing what he could at artificial respiration, fortune once more smiled upon us and she breathed again with a groan, and a second time. We breathed easier, with the hope that surely this is a permanent return, and we again laid her on the floor. But how were we startled soon after to see her relapse into a state of stupor, apparently more profound than ever before. This time the doctor laid her breast bare by taking hold of her collar and dress, under her chin, making the buttons fly in every direction. He gave her hypodermic injections of whisky, and applied cloths wrung out of cold water to her breast, without effect. She lay there, seemingly, as lifeless as a corpse. By this time I felt considerably played out. A strong man from the country, who had just come in to have some work done, was sitting by, looking on with all his might. I asked him to take her up as I had done, to which he readily consented, and held her in an inverted position as before until her breathing was restored, when she was again placed upon the floor. Suffice it to say, that the inverting process was resorted to the sixth time before continued respiration was restored. When this was accomplished we laid her on a lounge, and her respiration being quite feeble, the doctor gave her two or three more hypodermic injections of whisky. The heart's action also being very feeble, he sent out and obtained some nitrite of amyl, and had her inhale a portion, with very happy effect. During the whole time we kept watch of her tongue and saw that it did not drop down her throat and rest on the epiglottis and thereby produce strangulation. It was at least twenty minutes after she began breathing regularly, before she showed the least evidence of returning consciousness. Observing the clock, I discovered that it had been about an hour since the doctor began the administration of the ether.

Nothing further occurred, in reference to the case, to mar our expectations of a speedy recovery, and right glad were we when we felt assured that a restoration was at hand. She commenced taking the ether at a few minutes after 2 P. M., and a little after 5 P. M. she walked home, a distance of five or six squares. Squibb's ether was used and less than three ounces were given, and from a can opened then for the first time in my presence.

There is an exceedingly interesting account of a case, called "Sims's Case," related by J. Marion Sims himself, in a paper read before the British Medical Association, of the syncope and resuscitation of the patient. He was operating upon a French countess —young, beautiful, accomplished—for vesico-vaginal fistula, the result of her first accouchement. The account is extracted from his paper, and given in vol. III, page 125 of the *American System of Dentistry*, by Dr. Litch in his able and exhaustive paper on "Anæsthesia and Anæsthetics," which will richly repay any man to read.

In Sims's case, chloroform was given instead of ether. But to all appearence, the syncope, as the result of anæsthsia, was the same, and in the treatment of *our* patient we endeavored to follow the same course adopted in Sims's case, as the great Nelaton said, who was standing by, watching and giving orders on that occasion, "Certainly; there is nothing else to do."

About two weeks previous to our experience with this lady, Dr. Band, one of the prominent physicians of this city, had a similar experience with her in the office of Dr. Hamilton, one of my neighbor dentists. This time she had but one tooth extracted. After an hour or more of vigorous effort on the part of the two doctors, she came out all right. When she was fully restored, they very emphatically endeavored to impress her with the fact that she was not an acceptable subject for the action of ether, and for her never to attempt to take it again under any circumstances, reminding her, that if she did, in all human probability, she would wake up in another state of existence. She gave neither Dr. Kelsey or myself the least intimation of the advice and caution that they had given her. If she had, she would have met with a prompt refusal.

ALUMINUM CAST DENTURES.

BY DR. C. C. CARROLL, OF MEADVILLE, PA.

[Given as a clinic at the Michigan State Dental Association meeting, held at Ann Arbor, Mich., March 20, 1888.]

Aluminum has long been regarded as possessing many properties peculiarly fitting it as a base for dental plates, such as lightness, stiffness, conductivity and strength; yet it has certain peculiarities differing from other metals that have precluded its general use in the mechanic arts, and especially in dentistry until quite recently. Two objections to its use as a swaged plate have existed. First, our inability to solder it; and second, when swaged dentures with rubber attachments have been made, it has been found in many cases to disintegrate or become porous by the action of the fluids of the mouth. As the result of a long conducted series of experiments, it has been discovered that the disintegration is caused by iron and other impurities found in the aluminum of commerce, which is used for swaged plates. Efforts have been made during the past quarter of a century to cast it into dentures, but its low specific gravity of only two and five-tenths, and its great contraction of a line to the inch in cooling, were the difficulties in the way of a cast denture. All these difficulties are now overcome in our prepared aluminum, which is first made chemically pure to prevent disintegration, then alloyed with a small per cent. of noble metals that expand in cooling and thus compensate the contraction of the aluminum, reducing the contraction to the one-tenth part of a line or the one one hundred and twentieth part of an inch, practically nil, enabling us to cast directly upon the teeth without a fracture. The difficulty of making a sharp cast of aluminum by virtue of its low specific gravity is overcome by the use of our pneumatic crucible, which enables us to force the molten aluminum into every part of the matrix producing a perfect cast of the model.

We take an impression for this aluminum cast work as we would for any other work; then from this impression make a model of plaster-of-Paris, three parts, and of fine sand or marble dust, one part. Now we proceed very much as in rubber work. For temporary base plates we take common paraffine wax and roll it down to about twenty-three standard gold plate gauge.

There are various forms of mounting the common rubber teeth which we use in this aluminum cast work. The simplest of which is to cast a base plate with a flange or undercut for the purpose of attaching the teeth by pink rubber or celluloid. Upon this cast base plate we place wax and get the bite, which we place upon the articulator and mount in the usual manner for rubber work. Then attach our teeth to this aluminum base plate, making an artificial gum of pink rubber or celluloid.

Another form of mounting is to place plain teeth directly upon the temporary wax base plate, the same as in mounting for rubber work, with the exception that you space your teeth slightly to allow for this slight contraction. Along the alveolar border we make an undercut in the wax base plate which undercut is reproduced in the aluminum plate permanently when cast, for the attachment of a gum colored facing of pink rubber or celluloid. We now invest the tooth upon the model in the two-part perforated iron flask very much after the manner of investing for rubber work, Fig. I. Cut gates from the center part of the base plate to the pouring point of the flask, also pockets from the heel of the base plate into which the air is forced through the matrix in the act of casting. The wax base plate is removed by

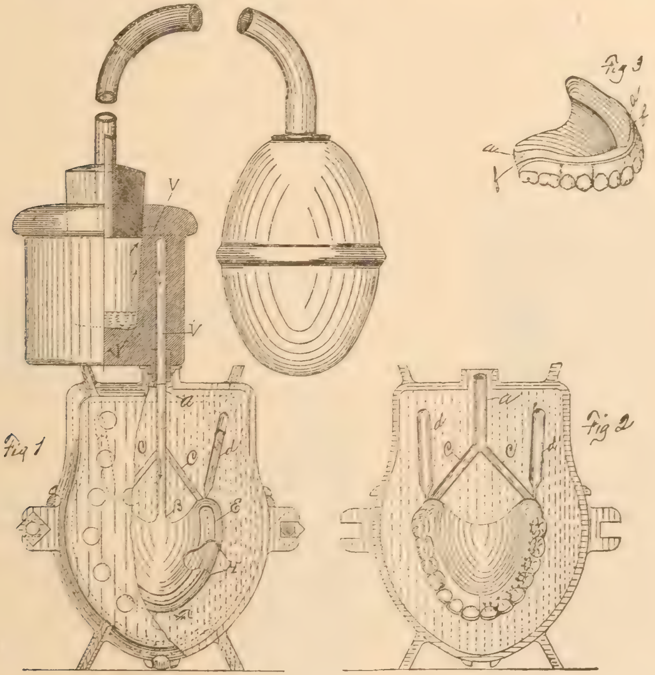

FIG. I.

Fig. No. 1 shows the temporary base plate on the model, and invested in the flask with a section of flask and investing material cut away. *a b* is the middle gate; *c c*, gates from the heel to the middle gate; *d d*, perpendicular gate; *e f*, the flange on base plate; *h*, base plate cut through to show position on the model; *v v*, direction of metal in casting.

Fig. No. 2 shows a denture mounted and invested in female part of flask for Base No. 2, one-half, with the wax removed, or for Base No. 1, when to be cast directly on the teeth.

Fig. No. 3. *f f* represents the line of the flange after attachment with rubber or celluloid; *a a*, alveolar edge of plate.

washing out with hot water, and the flask placed in the upper chamber of the automatic gas (or gasoline) furnace to be dried out preparatory to casting. You will observe that by this method of mounting we intend to cast the aluminum directly upon the teeth, attaching them firmly to the plate.

Gum section teeth can be used as well as plain teeth by exercising care in the method of mounting, taking the precaution of placing a thin slip of paper between the joints before investing.

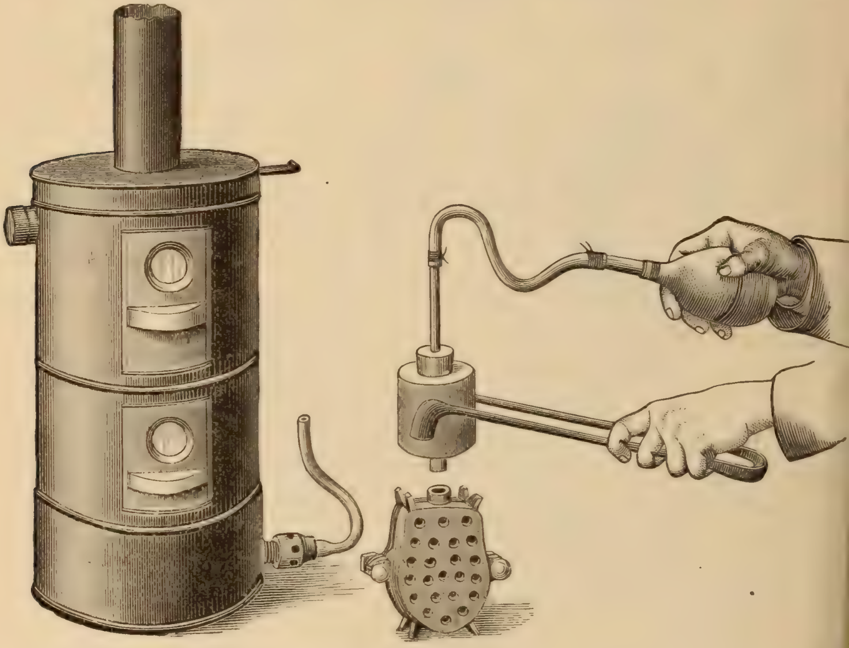

Fig. II.

When the matrix is dry, which will be shown if no moisture appears upon a mouth mirror held over the pouring point, we make the cast by use of an automatic crucible, which is placed in the lower chamber of our furnace and contains the aluminum to be used in casting. The crucible is placed upon the flask, connecting the nipple of the pneumatic crucible with the pouring point of the flask, and by means of a rubber bulb the aluminum is forced into the matrix, making a very sharp and well defined cast which is a perfect counterpart of the model. Fig. II. As soon as the piece has cooled, the flask is opened and the denture removed. The piece is then finished up by means of sand paper and pumice stone, using fine crocus for a finer polish. It takes and retains the appearance of the finest polished nickel plate.

All forms of dentures are readily made by means of this aluminum cast work, including crowns, bridges, as well as partial and complete dentures. This system of aluminum cast work is entirely new, simple and complete, and promises to revolutionize the present method of prosthetic dentistry.

While aluminum, by virtue of its extreme lightness, having a specific gravity of 2.5, is peculiarly fitted for upper dentures, it is better to have a heavier metal for lower dentures. For this purpose we make an alloy containing a specific gravity of 7.5. This alloy, Base No. 2, is the solder for Base No. 1, and is used for lower dentures partial or complete. By means of Base No. 2 a piece may be readily soldered and mended.

These aluminum outfits are placed before the profession upon their merits, without any royalty or license being charged for the use of the patents by which they are covered.

(At the close of the lecture, Dr. Carroll cast a full aluminum denture directly upon plain teeth.)

DISCUSSION.

Dr. W. H. Dorrance: Dr. Carroll gave his method of polishing plates. I have here a composition which is very valuable for polishing metal plates and especially so for aluminum. It is composed of fine-washed emery, crocus and hard oil.

Dr. C. C. Carroll: I am very glad Dr. Dorrance spoke of the polish. Have seen something like it, but never gave it any special trial. Shall ask the doctor for a little to try. Having been asked how much aluminum is required, I would say that a full denture of base No. 1 weighs from a quarter to half an ounce.

Dr. C. H. Harroun: This plate of base No. 1, which has been passed around is very small. Most of the plates we make are larger. Have found one must use nearly an ounce of the material on account of the surplus required in casting. I can fully indorse it from the several months experience which I have had in the use of Dr. Carroll's appliances. It feels natural in the mouth being the best substitute for the natural denture that I have found. My patients say so. I have used it in some of the most difficult cases in my practice, and have had a perfect success in every case.

Dr. C. C. Carroll: If so much material is used, it is not wasted. It can be re-cast time and again, thus utilizing all the scraps.

Dr. C. H. Harroun: I use kerosene oil for separating when investing.

Dr. W. H. Dorrance: I can recommend to the Doctor something much cheaper. It does not cost near so much. It is water.

Dr. C. C. Carroll: I use pulverized soapstone for separating when investing. Aluminum does not oxidize. Molten aluminum is not necessarily fluid aluminum. It has, however, a flux bicarbonate of soda that will cause it to flow readily, and should be used in re-melting scraps.

Dr. J. Taft: This metal is an alloy. Will both elements oxidize alike? So that if in re-casting to save the waste the proportion should be destroyed, would the alloy not disintegrate? That is a question important in considering the adoption of this aluminum. Again, might it not oxidize in some kinds of conditions of the atmosphere? Ozone is very active.

Dr. C. C. Carroll: The 3½% of noble metal is lost except so far as to cause the required expansion. While the gold case of my watch was affected at the sea shore by the ozone, the aluminum plates were not. It is an unoxidizable metal in the atmosphere.

Dr. W. H. Dorrance: Must the doctor not caution his patients against the use of certain medicines, such as contain hydrochloric acid, for instance?

Dr. C. C. Carroll: Just as all metals have their solvents, hydrochloric acid is the solvent of aluminum. But this is so only in its full strength, which we do not find in the oral cavity.

Dr. Parker: Have found amalgam to have a strong galvanic action on coming in contact with aluminum in the mouth.

Dr. C. C. Carroll: That can occur only when there is an excess of mercury in the amalgam.

When Dr. C. C. Carroll opened the flask which had been allowed to cool he said, to the question as to what effect common salt has upon aluminum plates, that of all his patients no doubt eating salt daily, there had been no effects. He went on to say: There is sufficient specific gravity in base No. 2 so that it does not require to be forced into the flask by pneumatic pressure like base No. 1. Do not melt the aluminum in an iron crucible on account of its affinity for oxide of iron. Use bicarbonate of soda as a flux when melting.

Dr. C. H. Harroun: Will it do to melt the aluminum in one of our common crucibles?

Dr. C. C. Carroll: Those crucibles are made of clay, which is silicate of aluminum. If you wish to use such a one, dilute it with whiting as you do when you use it for melting gold. This crucible is made of plumbago. If the nipple should come out of the crucible at any time on account of some mistake in handling it, a cement may be made after this formula: Silicate of soda and pulverized soap-stone; add a little water and rub into a paste. Having applied it, put the piece upon the furnace until it becomes dry. Later, when it is heated, it will become very hard. Some one asked me how one may know when to make the cast. Place the nugget of aluminum into the crucible and when it melts down you may know it is ready.

THE PRACTICAL APPLICATION OF ELECTROLYSIS.

BY W. B. AMES, D.D.S., CHICAGO, ILL.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

There are two important uses. As applied to the bleaching of discolored teeth, by getting nascent oxygen in contact with the surface to be bleached. To accomplish this, after filling the root, flood the cavity with acidulated water (one drop to the ounce, to render it a better electrolyte), then place a metal electrode connected with the negative pole of the battery in contact with the moisture somewhere near the margin of the cavity and pass a platinum needle, connected with the positive pole of the battery, over the surface to be bleached. Upon closing the circuit the oxygen of the water is liberated at the positive pole near the surface to be bleached, and the hydrogen is liberated at the negative electrode outside the cavity. In all processes of bleaching it is the nascent oxygen on which we depend for our results.

In the treatment of pyogenic surfaces, the object is to liberate in contact with the tissues some potent agent such as nascent oxygen, ozone, or iodine.

In the treatment of pyorrhœa we can electrolytically decompose the contents of the pockets about the roots of the teeth by passing into these pockets a platinum electrode connected with the positive pole of the battery, passing a current from it to a sponge electrode connected with the negative pole and held by the patient in the palm of the hand or against the face, thus securing nascent oxygen and ozone in the pocket about the needle. An increased stimulation can be obtained by decomposing in the same manner a solution of iodide of potassium placed in the pocket. This can be conveniently done by picking up a few crystals of the iodide upon the moistened end of the positive electrode and carrying it to the pocket, its fluid contents forming a solution. The aqueous solution of iodine obtained by this electrolytic decomposition is an ideal aqueous solution, and is much superior to the alcoholic solution.

The apparatus necessary for this is the flexible platinum needle to be connected with the positive pole of the battery, and a sponge electrode to be connected with the negative pole, to be used as stated. The sponge electrode should be moistened with a warm solution of common salt in water. This decreases the resistance, thus allowing of a milder current than could otherwise be used. Two fresh cells will usually accomplish the result, but if not fresh, three or more will be needed. The principle upon which this process depends is the law governing electrolytic decomposition: the positive elements of an electrolyte appear at the negative pole and the negative elements at the positive pole in the decomposition of any fluid conductor.

For the treatment of pus sacks at the apical end of roots having an outlet through a fistula, I would use an olive pointed platinum electrode of a size that could be readily passed through the fistula, decomposing and pus and other contents, or a solution of iodide of potassium placed there in the same manner as in the case of pyorrhœa pockets.

DICUSSION.

DR. J. TAFT: There are cases in which this method seems to be most invaluable. We must, however, remember that it is not of general application, for we are liable to attempt impractical uses of it. How far will the application be liable to reach? Will it go to the bottom of the pocket? If not how shall we accomplish that object? We might wrap the electrode in silk so as to insulate all but the very end. Then the current can be placed at any point desired. In breaking up tumors this process may be used. I have had no experience with malignant tumors, but have seen several cases of benign tumors broken down and healthy tissues spring up in their places. Think it in many cases better than to cut them out. Again, in the case of diseased gums you may decompose the contents of the enlarged parts of the gums. The question arises, how much can be gained by decomposition over some other method? If you get simply free oxygen, you have nothing better than can be done by peroxide of hydrogen. We destroy the matter which may be there. It is the persistent presence of the irritant that causes the trouble. Get the evil out and the tissues can rally. Am not sure but that the decomposition of iodine would accomplish too much. It is liable to do more than is necessary. The nascent iodine would be more escharotic in its influence than is needed. It is very powerful. The cases require special thought and care. We should apply remedies with caution. There is often more danger of an excess of treatment than of a falling short.

Dr. W. B. Ames: A needle may be used which is insulated except at the extreme point. A nice manner of getting this insulation is to use a steel or iron probe which has been gold plated for about an eighth of an inch at its extreme end. In use, the unplated part of this broach will very soon oxidize, the oxide forming a very good insulation, leaving the plated extreme to do the entire work. For some cases I only decompose the contents of the pyorrhœa pockets and pus sacks, but in cases of long standing I decompose a solution of iodide of potassium placed there, aiming to get the stimulating effects of the nascent iodine. The aqueous solution of iodine obtained by the electrolytic decomposition of the solution of iodide of potassium has the stimulating properties without having the same escharotic effects as an alcoholic solution of iodine. Have never seen any bad results from this use of iodine. Theoretically it would seem that the decomposition would not be the same upon all surfaces of the needle immersed into the contents of the pocket, but it is so nearly so, practically, that a needle partially insulated is not needed for this purpose. There is undoubtedly a stimulation from the passage of the galvanic current, but we do not know to what extent this enters as a factor in producing the results. In the disinfection of root canals by the electrolytic decomposition of the putrid mass contained in them a partially insulated needle, such as described, is useful for the reason that in this case it is desirable to bring about the decomposition most intensely at the extreme end of the needle. By passing this gradually to the apex the contents is thoroughly decomposed or at least disinfected, and on its thorough removal the root canal can ususally be immediately filled. This applies, of course, only to cases where the root canal can be easily traversed by the needle. Have found it of quite extensive use in my practice.

ORAL ANTISEPSIS.

BY JOHN L. GISH, M.D., D.D.S., JACKSON, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

There is no one subject at issue in our dental profession to-day that should receive more thought and consideration than the subject of dental or oral antisepsis. Dental caries has been the subject of much careful thought and investigation for many years past. Our knowledge of dental caries has been greatly enlarged by the associate sciences of microscopy and chemistry. It was by the aid of these sciences that we learned that micro-organisms were always present in and around a carious tooth, and that it was acid; and yet we could not declare that these organisms were the true cause for they were present under all circumstances, and it was equally as fair to assume that the acidity might be the *effect* rather than the cause of the diseased state.

The chemist, long before the microscopist, proved the presence of micro-organisms, discovered that in the process of decay a class of substances, having distinct chemical and physiological properties, were formed. Later, this class of bodies were found to be analogous with the so-called *alkaloids* and called ptomaines, but their mode of formation and their true chemical composition was not discovered.

It is still a matter of much consideration as to how the ptomaines are formed, some claiming that it is the excreta of the microbes; others that it is the result of the breaking up of more complex substances, or the union of simpler bodies as the result of the disturbance of the molecular state of the compound caused by the presence and growth of the micro-organisms. The almost indefinite number of forms and wide distribution of microscopic life are known to all. We find them in the earth, in the air, and in the water.

We know that certain species or families of microscopic life, produce during their development, bodies or substances which, according to our modern chemistry, are classed among acids; and acids are hydrogen compounds in which hydrogen has a weak affinity and is more easily liberated than the other elements of its group.

We know that all forms of life, however small or however great, are produced and reproduced either for better or for worse when existing under the proper circumstances and conditions. Therefore, with these facts, let us take our study to the oral cavity, and there we will find a culture medium which is kept at the necessary temperature for the growth and development of the micro-organisms. The microscope reveals to us the presence of many species, and when our modern chemistry is more precise we will no doubt discover a more complex mixture of ptomaines as the result of their presence.

If these complex bodies or ptomaines were the only result of these organic growths our oral pathology would be much more simple, but such is not the case. Acids or hydrogen compounds are largely produced as well, and it is these, owing to their energetic effect, that makes for us a much more complicated subject with which to deal.

We are all painfully conscious that the tooth substance is susceptible to the action of acids. Hence, if these facts be admitted, and the organic growth produces either by cataytic action or their excreta a sufficient quantity of acid, which disintegrates tooth substance, it brings us to the practical question of How to arrest and discontinue its action.

To treat a disease does not necessarily require that we must know the cause; yet, knowing the cause, we can the more scientifically treat the disease.

Therefore, with the subject in hand, it is clear that we need a germicide, an antiseptic and a disinfectant. And it is upon this most important subject that I most earnestly ask your discussion.

We know that all forms of life are the resultant of the process of *nutrition.* Take away the food material and the proper culture medium and we destroy organic growth. Death of the microbes means one step towards antisepsis.

In the mouth we will find species of microbes that are anærobic; that is, this form of life will live and flourish in the recesses of tooth-structure without access to oxygen. Hence, simply closing them in with some sort of filling will not stop their development, but they will thrive and produce their acid products to re-act upon the tooth-structure. In the mouth we also find the ærobic microbe which lives by contact with the air.

To say that micro-organisms are the sole cause of dental caries is wrong. They play no part whatever unless there is a fracture or a fissure in a tooth or badly crowded teeth, or some fit place for them to make their home. We can have dental caries as the result of constitutional derangement or some diseased condition of the mucous membrane of the oral cavity and its associate parts. We can have dental caries as the result of the lodgement and decomposition of food material between and around our teeth. Mis-fitting plates, clasps, rough and unfinished fillings will produce local inflammations, which, with their acid products, will cause dental caries.

Therefore, with these facts before us, our mode of treatment will naturally suggest itself, namely, by our modern studies of bacteriology we will seek for an antiseptic or something that will arrest decomposition; we will look for a germicide or some agent that will kill microscopic life; but, knowing that some of these lower forms are very tenacious of life, and that our germicide will kill the adult but will not destroy the spore or egg, if you may so call it, we seek a sporicide, or something that will neutralize the spore or egg, and this we have very effectually in the bichloride of mercury, one to two-thousandths part, and in this we also find the germicide and the antiseptic, so far as microscopic life is concerned. In order that we may guard ourselves against the anærobic microbe, we must use thorough antiseptics in the cavity by means of a solution of bichloride of mercury, one to two-thousandths parts, or the application of carbolic acid, or oil of cloves, or absolute alcohol, or all of them as our judgment dictates before we introduce the filling material.

If constitutional derangement is the cause, we must direct ourselves to the building up of the patient's general health. When the mucous membrane of the oral cavity is diseased in part or whole, we must apply local treatment. When the plate or the clasp or the unfinished filling is the fault, smooth off the corners and cauterize the unhealthy granulations. If decomposed food material packed between and around the teeth is the cause, we must instruct our patients in the most forcible terms that absolute cleanliness is absolutely necessary if they wish to further the use of their dental organs. Give them explicit directions as to *when* and *how* to clean their teeth. See that they are supplied with silk-floss and that they have properly adapted tooth brushes, mouth-wash and tooth powder. See that all deposits upon and around the teeth are thoroughly removed and the enamel of the teeth nicely polished. In fact, thoroughly impress upon their minds that the mouth must be kept in a hygienic condition at all times if they wish to lessen the frequency of decay.

Now, more as a point of discussion, I will mention in connection with this paper the subject of mouth-wash and tooth powders. What compounds or mixtures or solutions shall be prescribed for our patients in order that they may apply oral antiseptics by their own hands? The answer to this question, in order that it may cover all cases, is not easy, but the greatest majority of cases can be covered by prescribing some pleasant and harmless solution, a little quantity of which is to be put into a large quantity of water, with the direction that the mouth and teeth should be thoroughly washed once or twice daily or more times if our judgment so dictates.

If we have any special cases to meet we can use absolute alcohol, water and glycerine as a vehicle, and then add any germicide or antacid, any anti-phlogistic, any tonic, or any astringent in any quantity or strength as we may deem it advisable to meet the requirement of the case. As for a tooth powder the same general rule is to be observed. The more simple the better. Prepared chalk or carbonate of magnesium answer the requirements of the greater number of cases. This base will remove the inspissated mucus and small particles of food that may be clinging to the surfaces of the teeth. To this base, carbonate of magnesium, for special cases we may add any medicinal property that we may think best.

These, then, gentlemen, are in brief my views with regard to the subject of oral antisepsis, and now it remains for the members of this Society to show how far practical and clinical experience confirms or takes issue with the subject in hand.

DISCUSSION.

Dr. J. W. Wassall: The subject which has just been so ably presented is a very important one to dentists. If it were possible to prevent the existence and growth of micro-organisms in the mouth, caries of the teeth could not occur. This, however, would probably not prevent erosion. Prophylaxis depends upon an intelligent appreciation of the pathological conditions to be combatted, and the paper is in this direction. It was Dr. Bogue, of New York, I think, who once said that if it were possible to to keep all the surfaces of the teeth absolutely clean, there would be no caries.

Dr. W. B. Ames: I can hardly say more than amen to what Dr. Wassall has just said of the paper and on the subject. Our patients are seldom equipped with proper appliances for cleansing the teeth and surrounding parts, and we are unquestionably doing them a better service in putting them in the way of avoiding, to an extent, the occurrence of decay than in restoring the parts after they have wasted. It is, of course, a question as to what extent caries can be avoided by the use of antiseptic washes, but they are undoubtedly of some benefit, and we ought to be able to give our patients who need it some prescription or the article itself that can be used to advantage. The compounds from spirits glycerine, boracic acid, etc., similar to "Listerine," I have used with good results, and we have hydro-napthol which is efficient in a solution of 1 in 1000 which ought to be a valuable component in a mouth wash.

Dr. W. H. Jackson: How long will your antiseptics remain during the night with the flow that there is of saliva? Cleanliness is all very good, but you must bring the system to such a condition that the micro-organisms will not develop, that the system will not be subject to them. Our greatest difficulty is to fight the general diseases of the system. Hence we cannot hope to have any "cure all" until we place the system in such a condition that the micro-organisms will not germinate.

Dr. W. B. Ames: Where do the germs come from?

Dr. Jackson: From the earth, the air, our food, etc. If we could breathe through a tube containing sulphuric acid, we could kill them, and thus prevent their getting at the teeth.

Dr. Ames: Then the mouth-breather is more apt to have diseased teeth than he who breathes naturally.

Dr. Jackson: Undoubtedly. In the treatment of certain diseases in the mouth, you will find acetic acid a very good thing, also alcohol.

PORCELAIN CROWNS.

BY DR. E. C. MOORE, DETROIT, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

By reference to your programmes, you will see that I am down for a paper, and to prevent disappointment I will announce to you beforehand that my paper is of a descriptive character, describing as briefly as possible a few illustrations, which I have endeavored to make so plain that not only he who runs may read, but even he who does not spend the time to read may understand from the illustrations; hence this apparent apology. If I fall short of the mark you may lay it to either procrastination or want of actual time in taking more deliberate aim at the mark, for this matter principally has been arranged since last Saturday evening. I don't usually delay these matters so long, therefore this hint is dropped so that those charitably inclined will interpret it as an apology for defects.

Crowns of various kinds have received deserved attention from the profession for several years past, and this combined effort on their part has resulted in great good in the way of repairing defects in human machinery. I say deserved attention since we have demonstrated by actual test that otherwise useless or even more than useless roots have been made a thing of beauty and joy for a long time if not forever, roots which have been a source of irritation and pain to that extent that they are presented to us only because of this pain, the patient coming for their removal as a last resort for relief. Such teeth or roots I say, are often restored to usefulness, beauty and comfort by proper treatment, and the attachment of some non-irritating mechanical fixture which will articulate with the occluding tooth, thus bringing this otherwise useless root into use and exercise, and consequent health and comfort.

My illustrations and descriptions are for the purpose of showing how porcelain may be used in connection with crown work to make it more artistic, and demonstate other advantages. First of which is the reduction of complicated operations to simplicity; second, setting a crown or half crown without being obliged to devitalize the pulp; and third, we are at liberty to set screws in the roots wherever the natural make of the tooth affords their strongest anchorage regardless of the relative position of one screw to the other, and it is a well known and established fact in mechanics that nothing holds stronger or better than a screw, and especially when more than one screw is inserted at different angles. And by this process of crowning we can avail ourselves of this advantage, as my illustrations will show.

I will describe first the simpler form and perhaps the one we most frequently have to make, that of the bicuspid, and in this we are supposed to be dealing with a bicuspid root, decayed or broken considerably beneath the gum, with the nerve canal properly cared for. The next thing to do will be to remove all decay from the exposed end of the root down to hard tooth bone, no matter if the surface of the end of the root is left quite irregular by such removal, all the better in fact. The next move will be the setting of a screw or post as shown in Fig 1. Cut off to suit articulation, now slip a thin tubing of iridio-platinum over this screw of proper length, next cut a piece of very thin platinum of sufficient size to slightly more than cover the end of the root as prepared, with the rubber punch, punch out a hole in the center of this plate somewhat smaller than the tubing, slip this over the tubing, which is already in position over the screw, in so doing the edge will be slightly cuped up but nicely filling the

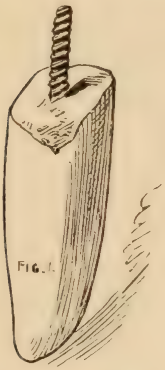
FIG. 1.

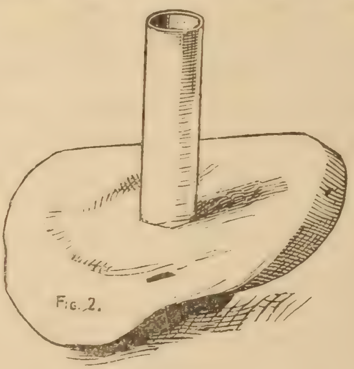
FIG. 2.

tube; burnish this plate to fit the uneven end of the root and sufficiently over the edge or periphery to mark its boundary; dry the surface of the metal and put on a mixture of plaster and white sand and when sufficiently hard remove, and should the little plate not come away with the investing and tube, remove it afterward when it will readily go to place on the investing. Proceed at once to solder by placing a few small pieces of pure gold in the little depression on the plate about the tube; when soldered drop into a little water when the investment will crumble away; then with a pair.of surgeon's shears trim away as indicated by the burnishing over the periphery of the root, when the piece will resemble Fig. 2. Now slip this skeleton back to place again on the root; the soldering process having softened the metal, complete the burnishing until satisfied with adaptation. The next step will be to take an impression. This is most satisfactorily done in plaster. If the vacancy be bounded by a tooth on either approximate side, then the impression must extend to these teeth. To govern the size of tooth to use, and if the space between these teeth be such that the impression will not draw—for it should be left to become quite hard—then this emergency must be met by making the impression sufficiently thick laterally, and trimming down on the grinding end so that it may be split in halves with a thick bladed knif, eand the halves removed in opposite directions, and the skeleton removed from the root and placed in its proper position in the impression; and instead of fastening the two halves of the impression together with shellac or any kind of varnish, hold the two halves in position between the fingers and bridge over the break with a plate of softened wax, caught at each end with a little melted wax from the spatula. Next place a piece of German silver wire, of size to fit the tubing, down the tube, leaving the end projecting $\frac{1}{2}$ or $\frac{3}{4}$ of an inch and fill the impression; when hard remove the wax and the two halves of the impression are easily removed leaving the skeleton occupying the same position as in the mouth. The proper tooth having previously been selected, and for this the writer prefers the "How crown," the recommendation being its shape, length and position of pins, and as occasion requires remove either top or bottom pins, adjust to proper position on the model and flow hot wax to the tooth and skeleton to secure to place; when the wax is cold, split the model through where the German silver wire inserted and invest in plaster and sand, leaving the German silver wire projecting beyond the investment, Fig. 3, No. 1; when hard remove wax, bend pins around the tubing to suit; the wire having filled its mission, that of preventing the crushing of the tubing by bending the pins about it, is removed by carefully rotating with a pair of pliers. When the investment is properly dried over the Benson burner a little solder is placed about the pins and soldered fast. I say a little solder, because the less solder the better the porcelain will adhere to the metal; the rest of the process is as easily done as described; it consists simply in packing the porcelain about the pins and tubing where desired, placed in the gas furnace and baked. When the piece presents the appearance shown in Fig. 4, the darkened portion representing the added porcelain.

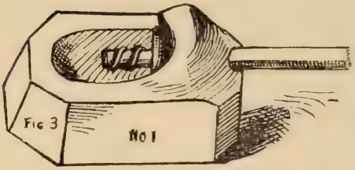
Fig 3 No 1

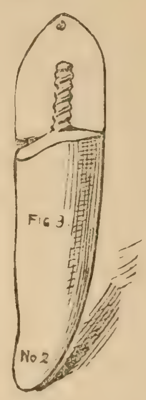
Fig 3 No 2

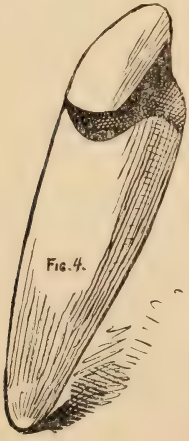
Fig. 4.

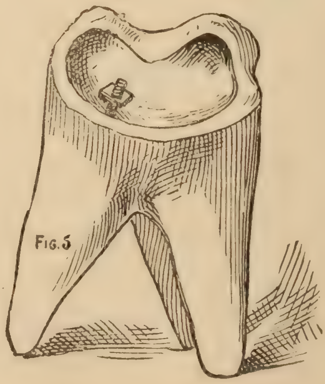
Fig. 5

Fig. 5 represents a molar tooth and with a good portion of undecayed tooth substance projecting beyond the gum, with the decay all removed and the edges prepared to get the greatest strength. Fill in the center with cement, or plaster will do, (for either only serves a temporary purpose,) until it presents the appearance of Fig. 6. The light line *k*, being the tooth substance and eventually to be the bearing for and joint of the porcelain and tooth, *b* is the cement or plaster. At this stage an accurate impression is taken in plaster, when hard remove and trim properly, and without getting a model, get the imprint of this impression in Melotte's Moldine, make a die and counter die; strike up a little plate or cap to fit the tooth, as shown in Fig. 8. The two pins *b b*, are the open ends of a staple which passes through the cap, and a little bowl-like piece *a* in Fig. 7, placed on the opposite side of the plate from that shown in Fig. 8, which is easily made by cutting out with an ordinary belt punch on a piece of lead and soldered to the cap, together with the staple as shown in Fig. 7, *a b*, and is designed to hold the crown to place on the tooth by being imbeded in the cement, and *b b*, in Fig. 8, to hold the porcelain to the plate, the dotted line indicating the porcelain when complete. The temporary cement having answered its purpose is now removed and fresh added, and the crown permanently cemented to place. To make these three pieces *a b* and *m* one, invest the cap *m* in plaster and sand, punch two holes in the little bowl *a*, the proper distance to receive the staple *b*, place it on the cap *m*, pierce through into the investing with small drill,

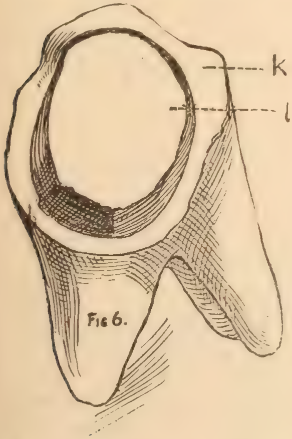

Fig 6.

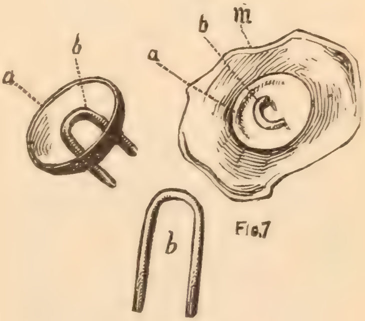

Fig. 7

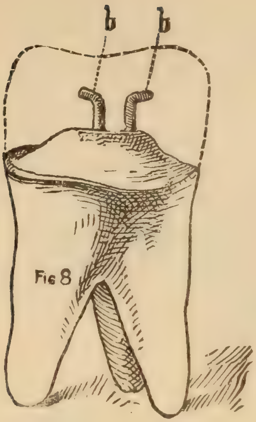

Fig 8

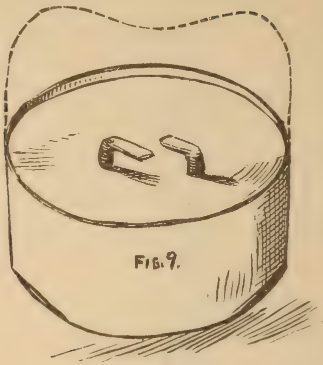

Fig. 9.

and without removing the drill, do the same with the remaining hole, then remove both, drop the staple *b* to place, and solder together as one piece.

Fig. 9, simply shows the ordinary form of crown, where a small portion only of porcelain is required for grinding purposes. The telescope is made in the usual way, removed from the tooth with the plaster impression. A model made, remove the telescope from the model and cut out the plaster from the grinding end say an $\frac{1}{8}$ or a $\frac{1}{16}$ of an inch from the edge of the telescope, fit in a thin piece of platinum to fit nicely, and two or more threaded platinum wires placed wherever desired, and the whole soldered to place. This being done, and the porcelain being baked to suit taste, small square nuts may be put upon the threaded end of the wire, these to firmly hold in the cement when placed on the tooth; the screws in the tooth being treated in a similar manner, producing a very strong state of affairs, viewed mechanically.

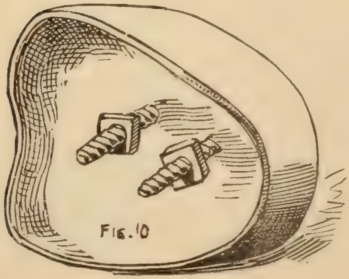

Fig. 10

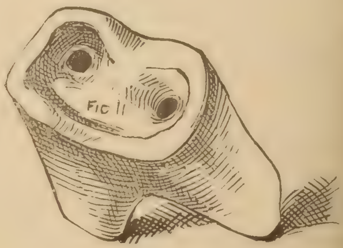

Fig. 11

These nuts are quickly made by cutting a strip from heavy German silver plate about an ⅛ of an inch wide, punch with holes about the same distance apart with the plate punch, and tapped, with the shears snip off as required. If a round nut is preferred, make a tubing of suitable size, tap with the ordinary tap, slit the end with the small saw for the screw-driver or wrench and saw off; these nuts are useful in various ways.

And now, gentlemen, the next crown we are about to construct, differs from the first or bicuspid crown, chiefly as regards the number and position of the screws, one to the other, which you will observe, by following the natural direction of the canals in the roots, will of necessity throw the screws at different angles, as Fig. 12 shows. To proceed with the *modus operandi*, the roots are drilled but not tapped, at least not at this time, if at all, this however at the discretion of the operator. The writer would recommend never to use any other but the twist drill for drilling the root where a screw is to be placed for crowning purposes. The next step is to fit the plate over or on the end of the root, by either burnishing or swaging, governed by circumstances. The plate being fitted and in place, two holes (or more,) are made through it, corresponding to those drilled in the root; next slip wires through these holes in the plate and into those drilled in the root, to fit snugly, but not too tight; next the tubing is slipped over these projecting wires to connect with the plate; this of course places the tubing in line with the hole drilled in the root,

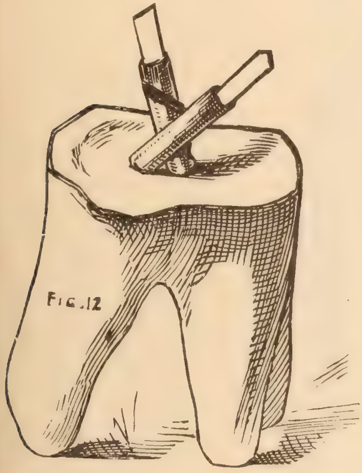
Fig. 12

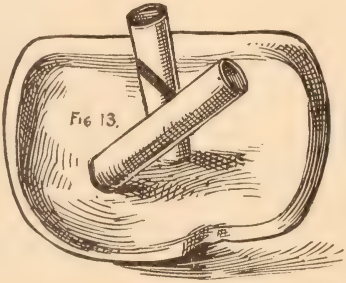
Fig 13.

now build the plaster and sand about these tubes and well over the surface of the plate and allow it to become quite hard, next draw the wires, carefully lift the whole from the tooth with the tubes and plate in their relative position; solder as before described, remove investing, solder brace joining tubes together, and in case of any change of positions of the parts, place back upon the tooth again and drop the wires back to position; this will align the parts if any disarrangement has taken place. At this stage the appearance is like that shown by Fig. 13. The wires are now withdrawn and the crown completed by building the body or porcelain to suit, and baked as shown in Fig. 14 complete; and in position on the tooth the wires left to show the relative positions of the tubing in the crown, and the position of the screws (if screws are to be used) in the tooth or roots. If thought desirable the roots may be tapped, and screws in place of plain wire used, but before the crown is finally adjusted a little wax may be placed at the orifice of the opening to the root, and the tubes in the porcelain crown served in like manner; this simply to prevent the cement from filling them. This can easily be removed through the tubes in the porcelain crown, and the screws driven home. I think you will all agree with me that the mechanical make up of such a crown is sound.

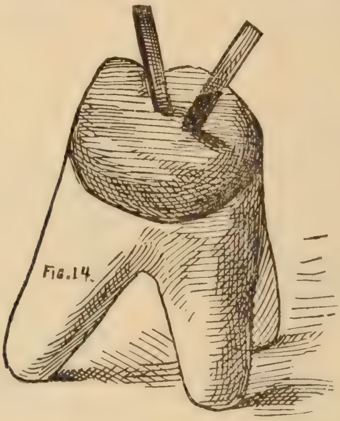
Fig. 14.

I have endeavored to make my description brief, and at the same time, plain as possible without going too much into detail, and my eagerness to do so may not have made some important points plain; and if so, and you will be kind enough to ask any questions, I will cheerfully do what I can to enlighten you.

[*Michigan State Dental Society Transactions to be Continued.*]

Compilations.

"Gather up the Fragments."

A NOTE ON EROSION.

BY S. J. HUTCHINSON, M.R.C.S., L.D.S.

I HAVE entitled my short paper as above, because I am as yet unable fully to explain the appearances I am now about to describe; therefore it would perhaps be more correct to call it a *query* rather than a *note.*

For a very considerable time I have been studying this subject, which, along with pyorrhœa alveolaris and alveolar abscess, as yet lacks a really scientific and exact explanation, in spite of all that has been said and written upon these subjects.

I am, however, quite clear upon one point, that I have never before heard or read a description of the condition I claim to have recognized to be always present in true erosion, but of which I have failed hitherto in finding for myself a sufficient explanation.

I must define first what I mean by erosion, and that is *a wasting or denudation of the enamel and dentine which cannot be explained by friction, attrition, or caries*, nor satisfactorily, by the use of acid medicines, nor by the direct secretion of mucous glands, or even by the action of the saliva.

Erosion, properly so-called, usually attacks the enamel first, and very frequently is observable in its earliest stage by a circular facet-like mark on the labial surface of an incisor for instance; this facet is usually somewhat depressed in the centre, but can be recognized when the fact is not more than one thirty-second of an inch in diameter, and the unvarying characteristic which I claim to have discovered is a curious film of discoloration, so attenuated that it can only be seen by the aid of a strong hand-lens, but when once recognized can never be mistaken, is *always* present in true erosion, but is absent from the surrounding healthy enamel. It can be scraped from the surface of the facet by a blunt burnisher, and under the microscope reveals, to me at least, nothing but small circular scales like epithelial scales, only much smaller; it is always quite black, but, as I have said before, the film or coating is so thin that the blackness is only perceptible by contrast, or when aggregated by scraping.

It adheres with such tenacity that brushing the teeth with a strong brush and powder will not remove it, so that it appears actually to be an impalpable layer of changing enamel or dentine which is disorganized.

I have here to-night the models of part of the teeth of two patients of different ages, for I find it present in patients of eighty and in patients of twenty to thirty. It is just the same in males and females, and in the mouths of smokers and non-smokers, in dyspeptics and in those who do not suffer from indigestion; it can be found in the pits on the grinding surfaces of molars which have to all appearance been worn down by *attrition*, but which yet have no antagonists in the opposite maxilla. It is equally present in those who take the utmost care to be cleanly and in those who do not.

It is equally present in those who use powders and in those who use only water or some liquid dentifrice, and is always just the same thin, almost invisable coating over the whole eroded surface, but never on the healthy enamel surrounding. I regret very much that I have not been able to secure an extracted tooth bearing these characteristics, for singularly enough I find that caries is not at all frequent in the same mouths as we find true erosion, and another curious fact noticeable is that osteo-plastic fillings often last longer than usual in these mouths.

That it does not seem explicable by the action of any mucus secretion is because we find it on surfaces not always in contact with the mucous glands; for instance, in model I the erosion is entirely confined to the palatal surface of the upper incisors and canines, and is quite absent from the buccal or labial surface, where we find it in model II.

It can scarcely be explained by the action of the saliva, as we should then expect to find all parts of the teeth equally affected.

Chemical action alone, is almost precluded by the very singular shapes the eroded surfaces assume, though we are tempted very much to believe that the black film may be a sulphide.

It would be very satisfactory to proclaim a bacteriological origin, and my friend Dr. Dudley Buxton has very kindly promised to conduct some "culture" experiments for me, to see if he can get any definite results.

This explanation would be easily accepted, for we can understand how a centre of bacterial energy could develop even on a smooth surface of enamel, and gradually spread eccentrically in patches of various shapes.

However this blackish film may eventually be explained, I can only say in conclusion that I am not prepared to state on the present occasion, whether it is cause, result, or coincidence; but I am quite sure it is always present, and I sincerely hope on some future occasion to give the result of my further researches, and to satisfactorily account for the *black film of erosion.—Brit. Jour.*

Editor's Specials.

"Write the Vision and make it plain."

NOT QUITE CLEAR.

Electric science is not yet fully understood by all. The present writer and another one still fall a little short. Our partner in the shortage,—name not remembered now,—in a dental journal,—don't know or care which now,—has given his views as follows:

"Now the question arises: shall we ever use amalgam and gold in the same tooth, and if so, why? and if not why not? There has been such varied teaching in the past, in regard to this subject, that it is time the old errors should be exploded and scientific teaching presented to our students of to-day. The old way was to put amalgam and gold in the same tooth if it seemed necessary, but never let them touch each other, or grave results would follow. After seeing such methods pursued for a term of years, we find that in spite of the teachings, grave results did follow, which ultimately resulted in the loss of the gold filling, while the amalgam remained comparatively sound, or rather, the tooth structure surrounding the amalgam filling."

"Therefore we found, first from an unpleasant experience, and later from theory, that if amalgam and gold are placed in the same tooth, they should have an uninterrupted communication, should be in complete opposition, so that no electric or galvanic action can take place,—because they touch each other."

"We have found that if the two metals touch in the electric battery, there is no longer a current, it is dead, no shock is produced, and it is just the same when the metals are in a tooth in the presence of an acid, as it is out of the mouth, in the laboratory."

If two metals are placed in a liquid that will corrode one of them, or both of them unequally, the one becomes positive and the other negative, but no electric or galvanic current will pass from one metal to the other, unless they are connected by a conductor, which in the ordinary battery is a wire, and which in the mouth may be a portion of the mucous membrane. When an amalgam filling is a true alloy, and not a mechanical mixture, it will constitute one element of a battery as if it were a metal. In some circumstances galvanic currents in the mouth are annoying and disagreeable; but the danger to the teeth comes from the resulting electrolysis—the galvanic decomposition of the fluids of the mouth. Only binary compounds are decomposed by electrolysis. Of these we usually find water and the chlorides within the mouth.

Let it be supposed that a gold filling and one of amalgam placed near each other, with a portion of mucous membrane touching both, results in a galvanic circle. Electrolysis must result, even if not perceptible by common observation. If water is decomposed, its oxygen goes to the amalgam and its hydrogen to the gold. But nascent hydrogen takes chlorine from almost anything containing it, and can here take it from the soluble chlorides in the buccal fluids, with the result of hydrochloric acid, which is the special solvent of bone phosphate. Now if this is formed at the gold, is it strange that the filling is lost by destruction of tooth substance around its margins?

Electrolysis of a liquid is proof of galvano-electricity passing through it. Other things being equal, the shorter the current the greater its decomposing power. And the proof is abundant that electrolysis may and does occur when the metals are in contact within the exciting fluid. Indeed a current is often established with but one metal in the exciting liquid. Let one side of that metal be polished while the other is scratched and rough, and a current can be passed, by a conductor, from one side to the other, and we have often seen this strong enough to deflect a galvanometer.

Commercial zinc has small particles of mechanically commingled with it. These and the adjacent particles of zinc in the exciting fluid, constitute an infinitesimal series of minute batteries, and electrolysis is manifested to a great degree in proportion to the surfaces excited. But this is not strange when we remember that the power of an ordinary battery varies inversely as the squares of the distances between the plates. Imperceptible distances are *distances* as really as are miles and leagues. The trouble is in our powers of perception. Such minute batteries give imperceptibly short currents with great electrolytic power in proportion. Such short currents in the mouth will not be found disagreeable to the patient like those which are longer, and pass over the mucous surfaces, exciting hundreds and thousands of terminal nerve loops. And with this in mind, it is readily understood why a gold plug inserted into an amalgam filling relieves the patient's discomfort from galvanic currents.

But it does not follow that these short currents have no decomposing power; for electrolysis is thus increased.

We are not discussing the amalgam question, but "Intrastomatic Galvanism," the subject on which we rode into the profession.

SWEETS.

SUGAR and "sweethearts" are not counted in now. They are crowded out and totally eclipsed by *saccharine*, which is seventy-nine times (more or less) sweeter than cane sugar.

Inasmuch as saccharine has come to stay, it is well to know how to use it. A correspondent of the *Scientific American* tells how he manages it thus: "Sugar being a prohibited article to me, I naturally became interested in Fahlber's 'saccharine,' and obtaining a supply as soon as possible, began experimenting with it. Using it alone to sweeten lemon juice or stewed cranberries, I found it very difficult to mix, and tried various dodges to remedy it, all of which had some drawback or other till I thought of dissolving it in glycerine.".

His favorite combination is one pound of glycerine and one drachm of saccharine heated to solution. Two teaspoonfuls of the solution will sweeten a half pint of lemonade, and three may be used with a fourth of a pound of cranberries. The solution is quite soluble "in water, milk, tea, coffee," etc.

The above is important information. This JOURNAL has a number of readers who should use sugar sparingly if at all.

ANOTHER LOCAL ANÆSTHETIC.

ACCORDING to Professor L. Lewin, of Berlin, there is in Africa a plant whose anæsthetic power greatly surpasses that of cocaine. The plant is called *Erythropleum Judiciale*, and its active principle is called *erythroplein.* Of course this plant, as its name implies, should be *judicially* used. It may not "throw cocaine entirely in the shade," as claimed by some; for this is harder to do than is generally supposed. Cocaine should be far more used in general surgery than it is. Amputations can be rendered nearly painless by its judicious use; and incisions in the skin may be quite so. The drug is not yet understood, nor are its capabilities appreciated.

THE HAYES' PROCESS.

THE Hayes' process of, and apparatus for administering anæsthetics, is gaining favor in the profession and being quite thoroughly introduced. The advantages claimed for this new process and apparatus, are, its absolute safety, desirable effects, adaptation to an uniform evaporation of all the elements in *any* narcotic mixture, its cleanliness, convenience, etc.

Dr. Hayes recently exhibited the apparatus to dentists and physicians of Toledo, and demonstrated what has been said regarding it. The apparatus has been highly endorsed by some of the most prominent dentists and physicians in this country, and these endorsements can be verified by practical demonstration. We call attention to the cut of the apparatus as it appears in our advertising columns. B.

SAD MORTUARY RECORD.

MRS. HANNAH COLLINS TAFT, the wife of Prof. J. Taft, M.D., D.D.S., was called home to "the rest that remaineth," on Saturday evening, April 14th, 1888. To one ready and waiting the manner of death is not important; but it is sad to think that after long years of peace and quiet in her pleasant home beside the railroad, she was instantly killed in an attempt to step across its track.

It has been our good fortune to have intimate acquaintance with the deceased in her joyous girlhood, when she was the life of her set, in her "joy as a new-made bride," in her early motherhood, and in her maturer years. Our pen cannot do justice to her memory, nor can any pen. Quiet, retiring and unobtrusive, she enjoyed her home and her church, while she rejoiced in the fact that her husband was known in these, but also in the halls and lecture rooms of professional science. She was glad that her first-born entered his father's profession and excelled in it. Glad that her youngest brother did likewise, with like result. And though her rejoicing was quiet, it was none the less real and ardent.

But she is gone. This day, the 17th, her earthly remains are laid to rest, in the full hope of the resurrection.

The bereaved husband and children have the sympathy of the entire profession, to say nothing of hosts of other friends.

"O Death! where is thy Sting?"

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

INFRINGEMENT.—According to a recent decision in the lanolin patent case, every one who mixes water with lanolin infringes on the patent and makes himself liable to the law.

FAILURES OF FILLINGS.—DR. GUILFORD says that over annealing of gold foil greatly injures its working qualities, and has been the cause of numberless failures in filling teeth.

EPITHELIOMA.—A French physician reports a number of cases of epithelioma cured in a few weeks by keeping the parts covered with a saturated solution of chlorate of potassium.

ANTISEPTIC SUBLIMATE PAPER.—This may be made by dipping bibulous paper into a solution containing 0.2 per cent. of mercuric chloride, and 0.5 per cent. of glycerine, and drying.

PERFUME.—Pour a little perfume over a few small pieces of pumice stone and place these in the drawer where towels and napkins are kept. In this way the perfume is lasting and will be appreciated by the patient.

TO PREVENT STEEL FROM RUSTING.—Immerse the steel or iron instruments in a solution of carbonate of potash for a few minutes, and they will not rust for years, not even when exposed to damp atmosphere.—*Southern Dental Journal.*

EPISTAXIS.—Persistent epistaxis is frequently overcome by irrigating the nostril with very hot water, as high as 150° Fahrenheit. The process is not painful, and often arrests the flow in a few minutes. If not, it may be repeated.—*Med. World.*

A GOOD MODELLING COMPOUND.—Take gum kauri, 12 oz., stearine 16 oz., and French chalk, 24 oz. Melt the stearine in a tin dipper, which has been previously heated and the tin run off, add the gum kauri and mix thoroughly, then add the chalk.

CLEANING AND POLISHING POWDER.—A good powder for cleaning jewelry, silver watch-cases, etc., is made by mixing about four parts of whiting with one of rouge, using with alcohol or water; this, it will be found, is easily brushed out of crevices, engravings, etc.

OFFENSIVE BREATH may often be cured by abstinence from meats and alcohol for a while; all the necessary elements of food may be obtained by the ingestion of fruits and grains, even in a more concentrated form than in flesh. We need not so much nitrogen.—*Med. World.*

TO KEEP SYRINGES IN GOOD CONDITION.—DR. FRANK ABBOTT says that syringes may be kept in perfect working order, by drawing half full of water before laying away after using. The water will not evaporate, but remain in the syring two or three or perhaps six months, just as it is left.

SHARPENING CORUNDUM WHEELS.—Place the wheel in a horizontal position, pour about a spoonful of alcohol on it, then using a stiff brush scrub the face of the wheel, lay it aside to dry thoroughly, and when used again it will be found nearly equal to a new one. This can be done as often as they get dull. Do not use them until thoroughly dry.

Arsenic, Applying to a Pulp.—There is no better way of applying arsenic to a pulp than to cut a piece of blotting paper the size required, dip it in oil of cloves, eucalyptus, eugenol or turpentine, touching it to finely powdered arsenic and placing it over the pulp, cover with cotton where all the walls are intact, or with varnished cotton where the gum is in danger of being attacked.—*Southern Dental Journal.*

Blow Pipes.—A very neat and effective Blow Pipe can be made by attaching a piece of rubber tubing to the gasometer or cylinder of gas, using an ordinary mouth blow pipe attached thereto, the pressure of gas against the flame of an alcohol lamp makes a nice flame for soldering gold crowns, bands, etc. By this method dentists who do not have illuminating gas to use for such work, will find the above all that is desired.—Dr. R. W. Chase, in *Archives of Dentistry.*

The Use of Cements.—If oxyphosphate or chloride cements set too rapidly, add a little pulverized borax. This will retard the setting. If they set too slowly, warm the slab on which the cement is incorporated, or apply hot air after the insertion of the filling. After the cement is well set, yet, before it is perfectly hard, apply a little soapstone and with a heated burnisher thoroughly burnish the surface of the filling. It not only renders it denser, but produces a nicely polished surface.

A Good Substitute for a Tooth.—Dr. E. W. Stevens says: In the formation of a partial denture where missing teeth are to be supplied, there sometimes occurs a space so narrow that no porcelain tooth can be made strong enough; in such a case I take a piece of gold plate and form a shell corresponding to the space to be filled, back of which I solder a couple of platina pins, put it in position as I would any other tooth, and vulcanize it on. This will stay, and is no more unsightly than a large gold filling. —*Western Dental Journal.*

To Prevent Vulcanizers Leaking.—Dr. Hilzim says: The best preventive of leaks in the packing while vulcanizing, is ordinary *stove polish.* Just before closing the vulcanizer, take an old tooth-brush, dip it in water, and rub it over the surface of a piece of stove polish, then apply the brush to the screw threads and also to the packing. You will find on turning the cover down, that it runs easy, and there will be no escape of steam. This plan will cure the worst kind of a leak.—*Archives of Dent.*

Human Bite.—Physicians agree that the poison conveyed by human teeth is one of the most annoying that they have to deal with. One of them writes: "I have under my attention severe and most complicated cases of blood-poisoning, in which the patient had but slightly abraided the hand in the course of a fight by striking the knuckles against the teeth of his opponent. I have known hands thus poisoned only saved from amputation by the application of all the resources of science."—*Med. Register.*

Antiseptic Fluid.—The following will be found a most excellent antiseptic and surgical dressing:

℞.—Bichloride of mercury - - - -	gr. iv.
Hydrate of chloral - - - - -	ʒ iv.
Muriate of ammonia - - - -	℈ ij.
Distilled water - - - - -	O v.

A slight sediment will appear in a few hours after the mixture has been compounded, but it is harmless. The fluid will remain clear indefinitely, and will be found one of the most convenient forms of fluid dressing.—*Med. Register.*

An Improved Container for Hypodermic Solutions.—Dr. F. A. Castle says: Instead of closing a phial, holding a solution for hypodermic use, with a stopper, draw over the orifice an India rubber nursing-bottle nipple without holes in its point. To fill the syringe, push the needle through the rubber, tip the phial bottom upward, and draw the desired amount of solution into the syringe. When the needle is withdrawn, the puncture in the rubber will close, and prevent either escape of solution or entrance of air. By properly sterilizing the solution and nipple, and using a clean needle, the solution will remain for a long time without change.

Starting Fillings.—Dr. Bennet says the cervical wall is the easiest to fill provided it is prepared properly. He simply cuts this wall plain and smooth with a chisel excavator, having a short blade, at an angle of 45°, and a square edge; then bevels the edge very little, and drills a shallow starting-point at each angle. He does not groove this wall unless the tooth is thick at the neck. When these pits are filled he carefully applies the matrix, and crowding in a large mat of semi-cohesive gold, makes a base for the filling, which can be packed with as large a point as there is room for; using a small one around the border and in the angle already mentioned.

Important Tests.—To distinguish between any dry powder containing either chalk, calomel, corrosive sublimate, or arsenic. If *chalk*, we get a white precipitate with water, an effervesence with hydrochloric acid and a white precipitate with ammonium hydrate. If *arsenic*, we obtain a white precipitate with water, hydrochloric acid, and ammonium hydrate. Also if some of the powder be sprinkled on hot charcoal, a garlic odor arises. If *calomel*, a white precipitate will be formed in water, and hydrochloric acid, but a black precipitate when treated with ammonium hydrate. If *corrosive sublimate*, it dissolves in water, forms a white precipitate in hydrochloric acid and a black precipitate when treated with ammonium hydrate.

Capsicum as a Counter Irritant.—Dr. C. B. Rohland says: Buy a "Benson Capsicum Plaster," shellac the back of it, cut off, in pieces of size suitable to the case in hand, and, if only gentle stimulation is required, apply as it is. Should you wish more decided action, add a few grains of capsicum, which will adhere to the sticky surface. Should you desire to use other medicines, press a small wad of prepared cotton or paper fibre lint to the sticky side of plaster, trim to suit, and moisten with any tincture or combination you please. This is also a very effective way of applying cocaine. Apply moistened pads to the outside and inside gum, hold with thumb and forefinger, or with properly bent piano wire, after the method of the "automatic forceps."—*Archives of Dentistry.*

To Bleach Sponges.—As sponges are important articles in surgery they should be clean and white. A pound of small *sponges* can be purchased for a small sum and will go a good way in private practice. The following is a convenient and short way to bleach them: First, beat the sponges upon a flat surface to break up any large pieces of calcium deposit, then place them in dilute hydrochloric acid (1–10) for a few hours, and shortly the lime disappears and they are ready to be thrown into a solution of permanganate of potassium (℥ j to O iv of water). Stir well for five minutes and change to a solution of oxalic acid (℥j to O iv); wring out and repeat in the solution of the same strength with the addition of hydrochloric acid ℥ss; by this time the sponges are generally very clean and white and but little damaged. The oxalic acid can be washed out by passing the sponges through water several times, and they are ready for the antiseptic solution.—*Coll. and Clin. Rec.*

Sodium Sulphibenzoate.—Still another compound has been added to the group of antiseptics, under the name of "sodium sulphibenzoate." It is described by M. Heckel as being prepared by dissolving sodium benzoate in a strong solution of sodium sulphite, and was, in fact, the outcome of an attempt to combine the antiseptic properties of these two salts. The chemical and physical properties of the compound are not mentioned, beyond the statement that it is very soluble in water at the ordinary temperature; it is also affirmed to be absolutely innocuous to the human organism in large doses. But its antiseptic properties are declared to be very considerable, it being reported, as the result of clinical experiments in the hospital of Saint Mandrier, that a solution of sodium sulphibenzoate, in the proportion of four or five grammes to a litre of water, used as an application to wounds, is superior to carbolic acid, and comparable in its good effects to the salts of mercury without their toxicity, or to iodoform without its disagreeable odor.—*London Phar. Jour.*

Obtunding Sensitive Dentine.—Dr. Ottolengui in his paper read before the Central Dental Association of Northern New Jersey, gives his method of treating sensitive cavities as follows: Apply the rubber-dam, dry the cavity with bibulous paper, and then insert a pledget of cotton saturated with absolute alcohol, selected on account of its affinity for water; next direct a series of blasts of hot air to the cavity, persisting till the parts become whitened, or thoroughly dry, often taking as long as three minutes. It may be as well to mention that what is usually sold as a hot air syringe is not the best to use, from the temptation to make the application of the blast continuous, which will result in pain. It should be applied intermittingly; remember that evaporation is what we are seeking, and not the heating up of the tooth, and this may be accomplished as well by stages as by continuous heat, since the supply of moisture is cut off by the dam.

When satisfied that the water is evaporated, throw on a continuous spray of ether. This will at first, in about forty per cent. of cases, cause pain, which will, however, almost at once begin to lessen as the spray is continued, and in the end it will be found that all sensation will be controlled. The tooth may now be cut almost at will, and with no change in sensitiveness in consequence of entering the dentine, even to a considerable depth, for undercuts, anchorages, etc.

Articulating Teeth.—Dr. L. P. Haskell says: When will some dentists learn that it is just as important to have a proper articulation, as a properly fitting plate?

Many an otherwise perfect denture is rendered useless from this cause.

Among other things to be observed are these essential points:

The bearings should be on the *bicuspids and first molars*, and uniform on both sides; a slight closure on one side, harder than on the other, displaces the plate.

The six anterior teeth should not meet, but a good margin be left, at least an over lap of one-sixteenth inch; and even then they will be found after a time to interfere, and crowd the upper plate forward and down from the rear.

If the second molar strikes when first worn, it will soon crowd, and if there is a lower denture, the plate will be forced into the membrane.

If there is a lower wisdom tooth, it often stands at an angle of forty-five degrees, and consequently, if it meets the upper tooth, will crowd the plate forward. Do not let them meet under these conditions.

It is important also that the bicuspids and molars stand at such an angle as to tend to hold the dentures in place, rather than to tip or upset them.

Over-hanging *cusps* in a majority of cases, while following nature, are often the source of mischief as the *lateral* action of the jaw causes the displacement of the plates.

A Cheap Matrix.—Recently I have been successful with a matrix which I think will be of value to dentists who do not make gold crowns, and for patients who cannot pay for them, but who are willing to pay a moderate fee for saving badly decayed and broken molars. It is made from the composition silver strips that come for polishing between the teeth. One of the proper width is selected and cut a little longer than the tooth circumference. It is bent around with the fingers and the ends brought together with a pair of pliers, drawing it tight. It is then removed and placed on a mandrel. My mandrel is a round steel 7 in. long, $\frac{5}{8}$ in. in diameter at the large end and $\frac{1}{8}$ in. at the small end. The ends of the band are folded over and if the fold is not strong enough to hold, dip a piece of No. 60 tin foil in soldering fluid, lay it on the seam, and hold in the flame of an alcohol lamp. It will be soldered. Adjust the band on the tooth, and have the patient close his mouth to see if the articulation is all right. Now if the tooth is all prepared fill with amalgam. When full take a wad of cotton and press the filling with it—using your thumb. It will make the filling very compact, and bring the surplus mercury to the surface. Do not remove the band, but instruct the patient to call the next day or week and have it taken off. What I claim for this matrix is, it can be left on the tooth till the filling is hard. It is not expensive or hard to make. It is unequaled in filling large cavities with thin frail walls, by grinding down the walls and building the filling up over the edge, making the whole grinding surface of the tooth amalgam.—Dr. W. Sloan in *Items of Interest.*

The Solubility of Resins.—M. G. Kliebbahn, in the *All. Oest. Chem. und Tech. Zeit.*, gives a formula for the analytical examinations of resins, of which the following is an abstract:

The determination of their solubility in various solvents, and their behavior when treated with acetic, sulphuric, and nitric acids, boiling solution of sodium hydrate, and with ammonium hydroxide.

In determining solubilities the gums are powdered, and treated with three volumes of the solvent at temperatures varying, according to the medium, from 70° to 81° F.

Copal, damar and colophony melt quickly without preliminary change, while amber, shellac, elemi, sandarac and mastic swell up when heated. In boiling water, colophony forms a semifluid mass; shellac, mastic, elemi and damar cake together; sandarac, copal and amber remain unchanged.

Alcohol readily dissolves mastic, shellac, sandarac and colophony; with difficulty, elemi; damar and amber are not acted upon. Copal cakes together.

Damar, colophony, mastic, elemi and sandarac are readily soluble in ether, while shellac and amber are insoluble. Copal swells in ether.

Carbon disulphide dissolves damar and colophony readily; mastic, elemi and sandarac with difficulty; amber and shellac are insoluble.

Oil of turpentine dissolves sandarac, elemi, damar and mastic; copal swells; amber and shellac are insoluble.

Benzol dissolves damar, mastic, colophony; sandarac and elemi are difficulty soluble, and amber, shellac and copal are not acted upon.

Petroleum ether dissolves damar and mastic readily; colophony, elemi and sandarac with difficulty; does not dissolve shellac, amber and copal.

In acetic acid colophony swells, while the other resins remain unchanged.

Sulphuric acid dissolves all resin, turning brown and causing decomposition. Damar, when treated with sulphuric acid, assumes a bright-red color.

Nitric acid colors mastic and sandarac light-brown; elemi, dirty yellow.

Sodium hydroxide readily dissolves shellac; colophony with difficuly, and does not attack the other resins.

Concentrated ammonium hydroxide dissolves colophony easily. Mastic, sandarac and copal swell up prior to dissolving; amber, shellac, damar and elemi are not dissolved.—*Phar. Record.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Illinois State Dental Society at Cairo, Tuesday, May 8, 1888.

Northern Ohio Dental Association at Painesville, Tuesday, May 8, 1888.

Nebraska State Dental Society at Beatrice, Tuesday, May 15, 1888.

Mad River Dental Society at Dayton, O., Tuesday, May 19, 1888.

Indiana State Dental Society holds its next annual meeting at Terre Haute, Tuesday, June 26, 1888.

National Dental Association at Washington, D. C., July 24, 25 and 26, 1888.

Missouri Dental Association holds its annual meeting at Pertle Springs, Tuesday, July 10, 1888.

Kentucky State Society meets Tuesday, June 5, 1888, at Louisville.

Minnesota Dental Association meets Wednesday, July 11, 1888, at St. Paul.

NORTH CAROLINA DENTAL ASSOCIATION.

The fourteenth annual meeting of the above association will be held at Raleigh, beginning on the second Tuesday of June (12). The session will continue three days. An excellent program has been arranged with interesting clinics as a special feature. A cordial invitation is extended to the profession.

H. C. Herring, *Sec'y*,
Concord, N. C.

NATIONAL DENTAL ASSOCIATION, U. S. A.

The National Dental Association of the United States of America will hold its next regular meeting at Washington, D. C., July 24, 25 and 26, 1888.

For this meeting, as for all former ones, the authorities of the Smithsonian Institute have kindly granted the use of the Lecture Hall of the U. S. National Museum.

All members of the profession in good standing are invited to be present.

ART. II, SEC. I OF CONSTITUTION.

The future membership of this Association shall be composed of dentists who may be elected upon application, which application shall be accompanied by credentials of membership in a State Society or by a recommendation from five members of this Association or of his State Society.

R. Finley Hunt, D.D.S.,
Sec'y N. D. A., U. S. A.

CHICAGO DENTAL SOCIETY.

At the annual meeting held Tuesday evening, April 3, 1888, the following named persons were elected officers for the ensuing year: J. A. Swasey, President; J. W. Wassall, First Vice-President; W. B. Ames, Second Vice-President; C. N. Johnson, Recording Secretary; Louis Ottofy, Corresponding Secretary; E. D. Swain, Treasurer; A. W. Harlan, Librarian; Edmund Noyes, Geo. H. Cushing, J. N. Crouse, Executive Committee.

Louis Ottofy, *Cor. Sec'y.*

MICHIGAN STATE DENTAL SOCIETY.

The following officers were elected by the Michigan State Dental Society for the ensuing year: President, Dr. C. S. Case, Jackson; 1st Vice-President, Dr. H. C. Corns, Detroit; 2nd Vice-President, Dr. C. W. McNaughton, Grand Rapids; Secretary, Dr. Wm. Cleland, Detroit; Treasurer, Dr. H. K. Lathrop, Jr., Detroit.

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

The Mississippi Valley Association of Dental Surgeons elected the following officers: President, H. L. Moore; 1st Vice-President, J. R. Callahan; 2nd Vice-President, M. H. Fletcher; Corresponding Secretary, F. W. Sage; Recording Secretary, A. G. Rose; Treasurer, Frank A. Hunter; Executive Committee, E. G. Betty, O. N. Heise, Wm. Conrad.

PENNSYLVANIA STATE DENTAL SOCIETY.

The twentieth annual meeting of the Pennsylvania State Dental Society will be held in Philadelphia, Pa., Tuesday, June 5th, 1888. The session to continue for three days.

Wm. B. Miller, D.D.S.,
Recording Sec'y.

Books and Pamphlets.

THE STUDENT'S MANUAL AND HAND-BOOK FOR THE DENTAL LABORATORY, by Dr. L. P. Haskell, of the Dental Department of the North-Western University, Chicago. Price $1.00. Welch Dental Co., Philadelphia, Publishers.

Our readers are so familiar with the practical sayings of Dr. Haskell, that have from time to time been presented in the Journal, that it is unnecessary to go into particulars concerning them, further than to say that the condensation of practical ideas as they are stated in the work, makes it a valuable book for every member of the profession and especially so coming from a man who stands at the head in this important branch.

To give a more comprehensive idea of the work, we quote the table of contents as follows: General Principles—Laboratory—Tools and Appliances—Blow Pipe, its use—Impressions—Plaster Casts—Dies—Swaging Plates—Fitting Plates—Clasps—Investing—Backing—Soldering—Finishing Metal Plates—Preparation of Gold and Silver Plates and the Making of Solders—Attachment of Teeth to the Plate—Relative Value of the Various Materials for Plates—Continuous Gum Work—Furnaces—Cast Metal Plates—Vulcanized Rubber—Celluloid—Gold and Silver—Selection and Arrangement of Teeth—Temperaments—Temporary Work—Adjustment in the Mouth and Regulating Teeth.

The last chapter is a reproduction of the article by Dr. E. H. Angle as it appeared in the January, 1888, number of The Ohio Journal.

The Lomb Prize Essays:

1. Healthy Homes and Foods for the Working Classes.
2. The Sanitary Conditions and Necessities of School-houses and School Life.
3. Disinfection and Individual Prophylaxis against Infectious Diseases.
4. The Preventable Causes of Disease, Injury, and Death in American Manufactories and Workshops, and the Best Means and Appliances for Preventing and Avoiding Them.

Bound in pamphlet form, No. 1, 10 cents; No. 2, 3, 4, each 5 cents. Bound in book form 50 cents complete. Can be had by addressing Dr. Irving A. Watson, Concord, N. H.

The Practical Dentist is the name of a new dental monthly publication, of 29 pages, just issued at Toledo, O. Edited by Drs. W. E. Blakeney and F. O. Brake, and published by Dr. C. W. Munson.

Dr. J. N. Farrar, of New York, is deeply involved in the construction of a "Treatise on Corrections of Irregularities of the Teeth." The work will comprise two volumes of 600 pages each and contain nearly 1,300 illustrations. Dr. Farrar will give all of his original ideas and in connection will add quotations from others who have advanced worthy ideas on the subject of irregularities. It will be a comprehensive work and will be looked forward to with great interest.

Our Aftermath.

When the baby has hiccoughs give it gin; when the father of the baby has hiccoughs, take away the gin. Some doctors would charge $2 for this advice.—*Puck*.

Everybody Rejoicing.—It is comforting to find that the boiling point of allylenedichlordibromida is 190°, while that of methylchlordibrompropylcarbiylchloride is something between 140° and 145°.—*Med. Register*.

Dr. U. D. Billmeyer of Chattanooga, Tenn., made a pleasant call at the Toledo office of the Journal, April 14th, while *en route* to his former home in Mich., for a short vacation. The doctor enjoys the Southern climate and is prospering finely.

Sued for Causing Dyspepsia.—A Jersey City dentist is charged with having given a fair plaintiff an attack of dyspepsia, for which, as though it had not already damaged her enough, she claims damages from him in the local court. She avers that a set of teeth he made for her turned out to be such poor chewers that her digestive *technique* went by the board, as it were.—*Phila. Ledger*.

A Three Years Course Required.—At the last meeting of the Board of Regents of the University of Michigan, it was decided to extend the time of attendance for graduation in the dental department of that institution, to three terms of nine months each. This is a decided stride in the right direction and we hope that other colleges will do likewise and thus place the dental profession on the foundation it deserves. What college will be the next?

No Stigma Attaching to Anonymous or Pseudonymous Correspondence.—This time-honored practice is most salutary and useful in every way, and can in no way be compared to throwing stones from behind a hedge; it is rather analogous to the action of those ancient knights who preferred to enter the lists with a blank shield. The author of the letter takes his hard knocks under his pseudonym, and in every department of journalism this has been a favorite and an honorable practice, neither does the fact of the author's name being attached to a communication in any way vouch for his courage.—Ed. *Jour. of the Brit. Dent. Asso.*

MEDICAL AND DENTAL LAWS.

The College of Physicians and Surgeons of Ohio.—Mr. Vinnedge introduced a bill in the House this morning providing for the registration of all practitioners of medicine and surgery, and the organization of the College of Physicians and Surgeons of Ohio, and to define the duties of the medical colleges of the State.

The bill provides that the Clerk of each county shall keep a book in which each medical practitioner in the county shall register his or her name. Every person practicing medicine shall be a graduate of a reputable medical institution having legal authority to confer degrees. The registered practitioners in each county shall meet and organize by the election of such officers as may be deemed necessary. The Presidents of the County Boards shall constitute the Trustees of the College of Physicians and Surgeons.

The Trustees of the College of Physicians and Surgeons shall, thirty days after their election, unite in the Capitol of the State and organize by electing a President, Secretary, Treasurer and such other officers as may be deemed necessary. They shall appoint a Faculty and annually publish the proceedings of the college, including a correct list of all registered practitioners. The Faculty shall annually meet on the call of the President to inspect such diplomas and pass upon the qualifications of such persons as may appear before them. The bill provides rules for the government of medical colleges, provides for the punishment of persons securing fraudulent diplomas, etc.—*Cin. Com. Gazette.*

Amendments to New York Dental Laws.—The bill which proposes several important amendments to the law which regulates the practice of dentistry in this State, and now in the hands of Assemblyman Robert Ray Hamilton, is eminently wise and proper.

The practice of dental surgery of to-day is as much in advance of the practice of dentistry fifty years ago as the physician's art is above the superstitions of the spell and charm workers. Oral surgery has made wonderful strides, and the dentist has been forced to keep pace or lose his practice.

There is nothing in the proposed amendments which will affect the business of legitimate dentists who are qualified to practice. They are designed to correct abuses that now exist and strike a blow at empiricism. In all professions there are charlatans, who cast odium on reputable members thereof, and it is to drive these quacks out that the Dental Society of the State of New York seeks to have the amendments made.

It is stated to be a fact that there are now practicing dentistry in this city several men who are in nowise qualified to so practice; that one of them was until very recently a blacksmith, and another had no known occupation until he adopted his present method of earning a livelihood, and that without any preliminary study or knowledge of the requirements of the profession.

Such men as these are absolutely dangerous. Cases frequently arise where a knowledge of surgery is absolutely essential and where an operation by an unskilled person might result disastrously to the patient. It is not to be presumed that a man rascally enough to sail under false colors would turn away a few dollars simply because he did not understand the case. Such a course would in all probability deprive him of some business in the future, and rather than risk that he would take desperate chances.

Reputable dentists will applaud these proposed safeguards. Quacks will denounce them.—*N. Y. Daily Graphic.*

THE
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Contributions.

"A word fitly spoken is like apples of gold."—Solomon.

THE FORMS AND ORIGIN OF THE TEETH.

BY V. A. LATHAM, L.R.M.S., (LOND.,) ANN ARBOR, MICH.

The predecessors and the equivalents—the ancestral forms and the analogues—of the structures we know as the teeth, are found among the earliest products of the animal economy. As soon as animals begin to be predatory, they must have some means of capturing their prey. Hence we find hard organs of a chitinous, horny, or other substance at the extremities of the appendages and around the mouths of most creatures, which are ingeniously contrived for seizing, holding, and dividing the prey. It is a great step from a beetle to a tiger, but there is much similarity in the forms and uses of their claws; and when a chetah plants his canine teeth in the neck of an antelope and sucks its blood, he repeats what a water-scorpion does when it grasps its prey, and then, by means of its rostrum, feeds upon the juices. The first office, therefore, of these hard appendages is prehensile; and that office they retain, in a greater or lesser degree, to the end. In many of the shell fishes we find structures on their appendages identical in shape and use to those of insects. In the mollusca we begin to discover an approach to the arrangement we call teeth in the higher forms of life, for we find in the buccal masses of these animals what are termed odontophores. These are membranous plates, upon which are arranged vast numbers of minute cones and hooklets, forming a strap-like masticating organ. These odontophores are protruded from the mouth to scrape up the food. Those who keep aquariums will have noticed how soon a snail will clean off the confervæ from the glass. This is done by its odontophore. This structure is also sometimes used to remove the carapace of another animal, so as to get at its soft parts for food. The variety and great beauty of these structures can be appreciated only by careful investigation under the microscope. The odontophores are probably chitinous in substance, although we might easily imagine them to be composed of true dentine, which they so much resemble.

From odontophores to the teeth of fishes is another great stride, but we still find the teeth of most fishes retain the same prehensile characteristics. In fishes we begin to discover distinct dental structures formed around the maxillary arches. It is true that in the lowest forms—such as the glutinous hag, and kindred species—the dental system is represented by only a single tooth; but as we progress upwards we find an almost endless variety of dental structures. So that, as Sir Richard Owen says, "In form, substance, situation, and mode of attachment, fishes offer more stricking modifications than do those of any other class of animals; and the anatomist finds a difficulty in obtaining a command of language sufficiently varied to portray the singular diversity and beauty, and the interesting physiological relations, which are manifested in that part of their organization." But while there is such a variety in the teeth of fishes, a great many of them are in shape simple cones. The office of these cones is almost wholly prehensile, and they answer the purpose required so long as the animal lives on food that is swallowed whole. But when the food has to be divided into pieces, new forms of teeth are developed. First, we find the cones attaining great size, as in the canines of the carnivora, for the purpose of seizing the prey and tearing the flesh; and moreover these tusks eventually become weapons of attack and defence. The use of these teeth is apparent even in the less prominent but more complicated canines of man, for we yet see the less refined class gnaw a bone by holding it in the fingers instead of using knife and fork. Next we find the cones coalescing, so as to form the "sectorial" or scissor-like teeth of the carnivora. These teeth seem to be formed expressly for the division of the flesh. Then we find another combination of cones. to form what Prof. Owen calls the "tubercular cones," which are used to crack the bones to get at the marrow, as seen in the dog, hyena, etc. The coalescence of the simple cones to form the teeth of the carnivorous and omnivorrous animals must first commence in the union of two or more of the germs from which the teeth arise, although we are as yet unable to fully demonstrate this proposition. For we find the crowns of these teeth made up of a number of cones fused into one, over which the enamel has flowed, following the elevations and depressions caused by the points of the cones projecting beyond the general mass; and then, when the crown has formed, we find the fused tooth germ again partially separating to form the roots of the human and other teeth. But this separation is by no means regular. When the animal becomes herbivorous, a yet greater differentiation becomes necessary; for there must be large and flat teeth with rough surfaces to grind the food into fine particles. Therefore, a varied, involved, and complex dental system prevails among the hoofed quadrupeds.

The specimens of the teeth of the elephant, cow, horse, rhinoceros, ibex, and wappiti deer we have here will give a good illustration of their general structure. The coalescence has in these teeth been carried very much further than before, and it has produced an entirely new combination in the hard parts of the tooth. We have in the first place the same kind of coalescence whereby several cones make up one tooth. But, in addition to that, we have several of these teeth, each with its own germ, uniting to form one huge grinder. Thus we see in the horse's tooth no less than five teeth united to make one. This union may be described as if my fingers and thumb should be joined together just where they meet, and then a substance should flow all through the interspaces and around the outside just as the cementum flows into all the interspaces of these five teeth and all over the crown, forming a square tooth as in the horse. By this arrangement, instead of the enamel being on the outside, as in the human and many other teeth, it runs all through this complex structure. The effect of this arrangement, is that the softer cementum gets worn away almost as soon as the tooth is erupted, and continues to wear down faster than the other structures; then the dentine wears away. The next, the enamel, as the hardest part, wears last, which always leaves on the grinding surface of the crown an uneven surface, particularly adapted for grinding the food. Look at the sharp projections in a deer or rhinoceros tooth. What cannot such arrangement do in the way of mastication? The deer and the ibex have teeth made up of four instead of five teeth, as in the horse. Not only do we find these modifications in the arrangements of the hard parts of the teeth in the herbivora, but there are other important changes. Among horses the canines, which are so large in the carnivora, are very small and useless in the stallion and merely rudimentary in the mare. In the ox, sheep and antelope, etc., modification has gone still further, for these have neither canines nor incisors on the upper jaw; and the canines in the lower jaw, if indeed they can be called canines, are more like incisors. Where the upper incisors are absent, a rough pad is developed for the lower teeth to strike against, as may be seen in any cow's mouth. Instead of huge canines, claws, etc., the herbivora are provided with horns, antlers, etc., for defence; or when it is only necessary to escape from an enemy, they have acquired fleetness or cunning. The appendages of insects and shell fish are frequently cast off; and, as with the odontophores and the teeth of fishes, are being constantly renewed. But in the higher forms of animals there is generally but one renewal; and when the permanent teeth are once in place they must suffice.

The elephant is a notable exception to this rule; for of the six huge molars he has on each jaw there is never more than one, or at best two partially, in place and use on each side at a time. The series is continually in progress of formation and destruction, of shedding and replacement, the new tooth succeeding the departing one horizontally from behind forwards, none being displaced by vertical successors. Both male and female elephants have tusks. These are really the incisors, although in structure they are not quite like ordinary teeth, but consist of the modified dentine called ivory. This is recognized by striæ proceeding in the arc of a circle from the circumference in opposite directions, and forming by their decussations curvilinear lozenges. and very much resembling the engine-turning on a watch case. The teeth are not bones. Bones are developed by the metamorphosis of true cartilage and ordinary connective tissue ; and in both cases the cells are converted into lacunæ, or what Kölliker calls bone-cells ; but the teeth are dermal structures. That structures do arise from the dermis is apparent in the hoofs, hairs, etc., of animals, the carapaces of some of the crustacea, the scales of fishes, etc. Indeed, according to Sengenbaur, the ancestry of the whole dental system can be traced back to the placoid scales of fishes, and this view has been adopted by the best authorities. Of these scales Sengenbaur says they have "the structure of dentine, are covered by enamel, and are continued into a plate formed of osseous tissue ; therefore, he calls them "dermal denticles." But how do structures that originate on the external surface for protection eventually develop on the internal surface for purposes connected with digestion, and assume such different forms? This is not difficult to understand when we remember, first, that the mucous membrane is only a differentiation of the skin ; and second, that constant variation to suit varying conditions is the order of life. As scales are formed on the skin of fishes, we can see how easily they might extend beyond the border line which divides the external from the internal coating and spread over the mouth. Now, once begin the development of hard substances in the mouth, if we but allow the inconceivable ages which the comparative anatomist tells us have been required for the development of the higher animals, and the long succession of ever-changing environment which all animals are constantly passing through, it is not difficult to imagine how the primitive forms become gradually modified from dermal scales into dermal cones, and then, starting from the simple form, became further modified in the way I have pointed out, so as to become adapted to the various kinds of work they have to perform. And in this way I think we can account for the different varieties of the teeth, while they retain some of their primitive characteristics. The teeth are fixed in their position in the mouth by various methods, which pass by gradational forms into one another, so that a simple as well as absolutely correct classification of these arrangements is impossible. But we may reduce the modes to four general forms, and say it is either by means of attachment by fibrous membrane, or by a hinge-like arrangement, or by direct adhesion (or anchylosis) to the jaw, or by implantation in the bony sockets which arise from the maxilliary bone for that purpose. Most fishes, particularly the sharks and rays, afford an excellent example of the first named method, whereby teeth are held solely by the tough mucous membrane which covers their more or less calcified jaws. In fishes of predatory habits there are found teeth which yield to pressure, and then, by means of a dense fibrous elastic ligament, radiating from the side of their base on the subjacent bone, return into their position with a snap. The use of these hinged teeth is to catch the prey, and also, as in the pike, for swallowing when caught. Again, a tooth is so completely in unison with the adjacent bone that it is difficult to see with the unaided eye the line of juncture.

Lastly, there is a special development of bony sockets which arise from the maxilliary arches and envelop the roots of the teeth, as in the human jaw. These sockets are perfect subservient to and dependent upon the teeth, and soon become absorbed when the teeth are lost. There is no anchylosis or fusion of the roots of the teeth to the bone, but between the roots and the "alveoli," as the teeth sockets are called, there is a highly organized membrane known as the "alveolar dental periosteum." This is the membrane which is severed when the tooth is extracted, and it plays an important part in producing the pain from a devitalized or so-called "dead tooth." The notion so much promulgated by the uninformed dentist, that a "dead" tooth will not be the cause of pain, is founded on a misapprehension of the facts of the case. This membrane serves as a cushion to the tooth, and is also its attachment to the socket by means of the prolongation of its vessels into the walls of the socket on the one side and the cementum on the other. This accounts for the necessity for a covering to the roots of the teeth which is not so dense as the dentine.

Although we have seen that the beginning of dental structures is in the scales of fishes, we have not now the time to trace the various modifications of the substances of which they are composed up to the teeth of the higher animals.

CROWN AND BRIDGE-WORK.

BY C. S. CASE, M.D., D.D.S., JACKSON, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

I wish to tell you about a new crown and movable bridge denture. The crown proper was described in a paper read before the Chicago Dental Infirmary clinic in December, and appeared in the January number of the *Dental Review*.

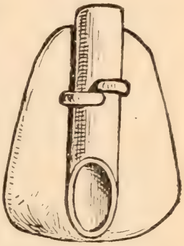

Fig. 1.

Those who are doing porcelain work can make the entire portions. It is hoped, however, to have all the different parts in the market ready for use.

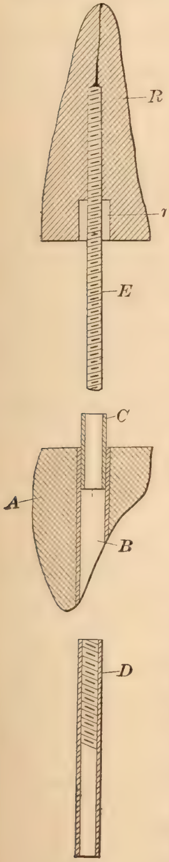

Fig. 2.

Select a plate tooth with pins standing side by side. Bend these around a platinum tube of the proper size as in Fig. 1, and restore the lingual contour with porcelain. You will now have a crown with a tube passing vertically through its centre similar to the Ash & Son's pivot tooth.

Before describing the operation of setting the crown, let me first call your attention to Fig. 2 which represents a vertical section of the root and crown displaced. *E* is a screw-threaded post seated in the root *R*. *A* is the porcelain tooth crown possessing the tube *B*. *C* is a second tube—preferably of platinum—which is soldered or screwed into tube *B*, forming a shoulder therein, and, projecting from the tooth, is finally received into the annular cavity, *r*, in the root,—the latter device being intended to give a longer and more rigid bearing to the crown. *D* is another tube threaded internally which, when screwed on to the post, will pass into the tube *B*, and being received against the shoulder, formed by the tube *C*, the parts can be firmly drawn to position as in Fig. 3, which represents the projecting ends of the post and tube cut away and the surface polished even with the lingual surface of the crown.

It is presumed that the operator will be supplied with drills, taps, posts and tubing of such exact size that the parts will work together with mechanical precision.

The tubes can be made by cutting narrow strips two or three inches long, from platinum plate of the proper thickness, and passing them through a draw-plate,—remembering that the internal diameter of tube *D* must be equal to the smallest diameter of the post, (to allow for the thread,) that that of tube *C* sufficient to slide over the post, and the external diameters of these two tubes equal, and a trifle less, than the internal diameter of tube *B* in the crown. Finish the tubes by soldering the edges which have been drawn together with a minimum quantity of pure gold. If the How post is used the tap which is used for the root will answer to cut the thread for the nut, or tube *D*. This should be cut only sufficient for each time of using.

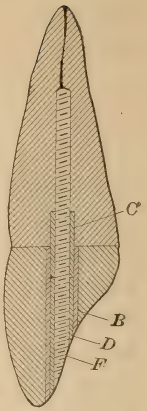

Fig. 3.

Thus far I have used the A How post, though my original design calls for a post having a cone-shaped screw at one end very coarsely threaded for the root, the base of the cone being equal in diameter to the requirements of the annular cavity, *r*, Fig. 4; the projecting portion of the post, straight and finely threaded to engage with the nut. This by its minimum diameter will afford the greatest possible strength in proportion to its size, and possess threads in keeping with the requirements of the material with which they are intended to engage.

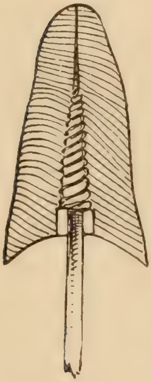
Fig. 4.

The first step in the operation proper, is to dress off the end of the root so that its exposed surface shall be a little below, but parallel with, the festooned border of the gum, (Fig. 5,) and to fit the selected or prepared crown to it so that, when in position, there will be no rocking movement. While holding the crown in place pass a drill or other suitable instrument through the tube, and mark on the end of the root the starting place to drill for the post. If the root canal is not in the proper position

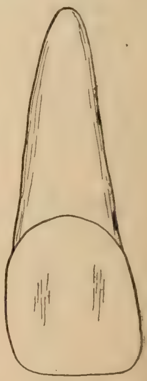
Fig. 5.

to receive the post, or is enlarged by decay or otherwise, it should first be filled with gold or amalgam.

Drill and tap for post and ream for annular cavity, *r*. After the post has been fixed in the root it may be necessary to bend it slightly in order that it may pass through the centre of the tube *B*. Now, to finally prepare the crown, insert tube *C*, a short distance into the cervical end of tube *B*, and invest,—leaving exposed the part where the tube enters. Use a minimum quantity of some easily flowing hard solder and apply the heat from the under side until it disappears between the tubes. I have used soft solder, but the use of the other is very easy and more reliable. Again, if tube *C* is made of plate of the same thickness as tube *D*, its external diameter will be larger, and can be threaded to screw into the previously tapped crown, tube *B*, instead of soldering. Cut off the tube *C* the proper length for the cavity *r*, and fit the parts together by screwing on the coupling, tube *D*, which you will have prepared as directed.

Before the final adjustment apply gutta-percha or Hill's stopping to the end of the root or crown; thoroughly warm the latter and immediately bring the parts firmly together.

The reason the ordinary cheap crown fails and early becomes a disgusting thing to both patient and operator, is because of decomposing organic material, that almost invariably will work its way between the joints with ultimate decay of the root. This is mainly due to the large mass of imbedding material which they require,—usually amalgam that shrinks or is not held firmly in place until it hardens, together with the general instability of the fittings, which admit of a slight movement during mastication with final imperfection of the joint.

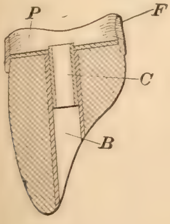

FIG. 6.

It is desired to surround the root with a band in connection with this crown it can be accomplished with comparative ease in several ways. It can be attached to the crown as in Fig. 6. *F* is the band or ferrule that has been fitted to the root and the crown ground to fit into it. *P* is thin platinum plate which is soldered to tube *C* and the band *F*.

Again the band may be provided with lugs which will prevent it from being forced too far on to the root, then the crown can be ground and drawn firmly into it with the final coupling.

There is another way presented for using the band especially applicable where this method is used for bridge-work, which is as perfect for protecting the root and possesses the advantage, also of not having it in sight.

Dress the root the same as at first described and make band of very thin platinum plate. While on trim off the projecting edge even with the dressed face of the root. Bend or burnish a piece of platinnm plate (also very thin) against the end of the root, its edges extending beyond the band. Remove band, solder the two together and finish. Cover the inside of this cap with a a layer of chloro-percha, return to place and burnish tightly against the sides of the root. Now fit the crown as at first.

BRIDGE-WORK.

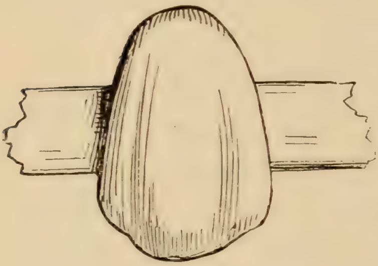

Fig. 7.

For partial bridge dentures between the roots of anterior teeth where the bite is not short, the following method, in connection with this crown will be found of great value, especially as it admits of being removed for repairs or uncorking a root.

After selecting and preparing the fronts for the supporting crowns as in Fig. 1, solder the end of a narrow strip of platinum plate to the tube so that when restored with porcelain, its end will project from the crown on the bridge side—or from both sides if desirable, as in Fig. 7—and uniting with its fellow from the opposite crown will form a span to which the intervening plate teeth may be riveted and soldered. In Fig. 8, *a* represents a partial bridge denture, and *b b* the coupling nuts. The latter can be made from the coupling tube, *D*, by first

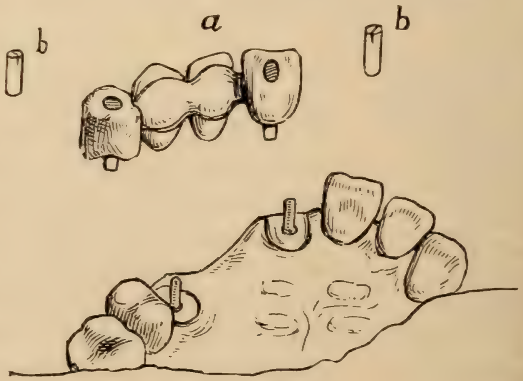

Fig. 8.

tapping it and cutting off pieces the proper length, which are made solid at one end and cut so as to be worked with a screw-driver. On account of the force required to unscrew them, the heads of the nuts should be of iridio-platinum or some hard metal.

DISEASES OUTSIDE THE MOUTH THAT AFFECT THE ORAL STRUCTURES.

BY DR. J. N. MARTIN, ANN ARBOR, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

The teeth first begin to form in the early part of fœtal life. Beginning about the seventh week, the process gradually goes on until by the eleventh week we have the germs for the set of milk teeth. There are variations in some cases, but these are the usual periods. These germs are of elements we little suspect. The hardest portions are composed of soft cells. They are composed of epithelial cells at first loosely grouped together.

There are certain laws that govern the development of all parts of the body. They are most marked in the fœtal state. As long as Nature's laws are not interfered with, everything goes on smoothly. But if a law is broken we find its influence on the fœtus. It is very sensitive to impressions. If there is an arrest of development at any time, the organ that is then developing will be absent or deformed. Great care should be exercised at this time, since any irregularity may show its effects upon the fœtus and result in various deformities, as cleft palate and harelip.

Maternal impressions during fœtal life may produce these results. They may be on the nervous or physical system. If on the former, we may have various mental and nervous disturbances. If they affect the physical system, the organ in process of development will be absent or imperfectly developed. What are the effects of disease in the mother or in the fœtus? The relation between them is so close that whatever is good for the one is good for the other and whatever is bad for the one is bad for the other. Hence diseases that prey upon the mother during the fœtal life of her offspring may produce lasting impressions upon it. Thus the child may inherit from its mother certain diseased conditions, as a weakened digestion, nervous temperment and other conditions that will interfere with the nutrition and growth of the child.

After birth, as a result of a few weeks' fever, the child's teeth may be destroyed; for example, scarlet fever, small pox, or typhoid fever may so alter nutrition and the secretions as to produce these results. These results are not confined to infant life but may affect the adult as well. The teeth contain organic and inorganic matter. If they are not properly nourished, the organic matter is diminished and the teeth become more friable than is normal, and are not able to withstand external influences.

The subject of dentition is looked upon by many as if all the disturbances in the system at this time were due to the eruption of the teeth. The child is supposed to live upon milk food up to this time. When the teeth are being erupted, there are certain important changes taking place in the intestinal canal, and the disturbances in the mouth are but local manifestations of general disturbances. We have changes in the oral cavities, to be sure, but at the same time new glands are forming and other changes are taking place along the alimentary canal. The child is being prepared to digest a different kind of food and the digestive organs must be changed accordingly.

What is the condition of the child during this transitional period? Probably nature intended there should be little disturbance in the mouth and system generally; and this would be so were it not that hygienic laws have been violated either before or after birth. Whenever we violate Nature's laws, we must pay the penalty. At this time there are changes not only in the alimentary canal and mouth, but in the nervous system as well, and these changes are in proportion to the amount of interference with nutrition at this period. The nervous system becomes more susceptible, and impressions made on the child are more marked. This accounts for the convulsions and the various nervous disturbances at this time.

The eruption of teeth is a physiological process and in itself should produce little disturbance. But as the child is erupting teeth we are apt to attribute all these disturbances to this, forgetting that all these changes are taking place at one time, while the eruption of teeth is but a small part of the cause.

The tongue is an indicator of general disturbances. But why look at the tongue only? Other changed conditions in the oral cavity are indicators as well. Acid secretions in the mouth are as strong indicators of abnormal conditions in the system as are the changed conditions in the tongue. In nine cases out of ten acid secretions in the mouth mean some change outside of the mouth. Whenever we have tumid gums more often the cause exists outside of the mouth than within. When we have tartar upon the teeth and the gums are tumid, we say the tartar is the cause of the tumid gums, while in reality the presence of the tartar is due to the excess of the carbonate or phosphate of lime in the secretions, and this excess is caused by a changed condition without the mouth.

Now as to saliva. In its normal state it is a bluish-white, ropy secretion, very little heavier than water. Normally it is alkaline in reaction. It is never in a marked degree acid without some special cause, and this cause is usually outside the mouth. Normal saliva changes so rapidly that if we wish to examine it, it must be done at once. Abnormal saliva may contain pus, blood, carbonates and phosphates of lime, etc. From the excess of the carbonates and phosphates of lime the tartar is produced and the diseases that come from this accumulation. The offensive character of the tartar is due to the presence of organic matter. Normal saliva of the child is similar to that of the adult, except that alkalinity is more marked. If the saliva become acid, its effects upon the oral structures are more marked.

In the common summer complaints of infants, such as indigestion and diarrhœa, the secretions of the mouth are generally acid. There is an excess of acid in the system, due either to overproduction or lack of proper elimination. When there is an excess of acid in the system, due either to indigestion or other causes, it irritates the alimentary canal and the mucous membrane of the mouth. Thus results increased irritation. If the secretions in cholera infantum or diarrhœa be examined, they will be found in a marked degree acid. The food, instead of being digested, undergoes acid fermentation. When acids are in excess they are absorbed into the system. The buccal secretions consequently may become more acid and the saliva rendered neutral or acid in reaction.

Causes of acid secretions in the mouth, according to Wright: 1. Inflammation of the mucous membrane of the mouth. 2. Diseases of the salivary glands. 3. Diseases in which there is an excess of acid in the system, as rheumatism and gout. 4. Indigestion or dyspepsia.

In inflammation of the mouth, we first get under-secretion, then over-secretion; excess of buccal and other secretions. Then if the mucous membrane breaks down by ulceration we have pus mingling with the secretions. The acid in excess is due either to excess of buccal secretions, diminished flow of saliva or changed saliva.

Catarrh has a marked effect on the glands of the mucous membrane wherever it occurs. It causes excessive secretion and later the secretions may become abnormal from overwork of the glands. This secretion may pass into the stomach and mingle with the digestive secretions and alter their condition.

Acid secretions favor the development of certain parasites, which cause one of the worst forms of ulcers in the mouth. Thus the result of another cause acts in producing secondary diseases in the oral cavity.

Another cause of acid secretions is disease of the salivary glands. They may be affected so as to cause diminution in the action of the glands and either diminish the alkalinity or change reaction to acid. One salivary gland may be diseased and secrete abnormally, the other may be normal; then we may have acid secretions.

In rheumatism and gout, there is an over-production of acid in the system. Over-production of acid in the system may end in change of salivary secretion, so that instead of being alkaline it becomes acid. It has been tested and found to be as stated. We notice this change in the mouth. We do not always know its cause. It is often attributed to disease of the liver. It is claimed that when there is an excess of acid secretions in the system it is generally due to a lack of proper elimination of effete matter from the system.

Indigestion or dyspepsia.—It may be either atonic or active variety. The former is due to lack of force in the digestive organs; the latter, to inflammation or congestion. What is the result? Food passes into the stomach at the temperature of 98½°, and if not properly digested undergoes changes that will increase the derangements. If the secretions and physiological actions are normal, the food is digested; if not, a long train of ills results. Whatever the cause may be, the results are about the same: we have imperfect digestion and as a result acid and gaseous fermentation. As a result of this gaseous distention of the stomach, food is not properly mingled with the secretions, and this increases the difficulty by retarding still more the digestive process. Also by the distended condition of the stomach and bowels, increased pressure upon the diaphragm results, the chest cavity becomes narrowed, the great venous vessels from the head are pressed upon. Blood will be pumped into the head since the arteries are not so compressed, and, as it cannot return, we have permanent congestion of the head, face and oral structures, and from these may result changes in the oral structures. Indigestion or dyspepsia exists but a short time before the secretions in the mouth become changed, and in many cases in a marked degree, acid. Some claim that as the teeth are developed from the epithelial structure they are affected the more by the change in the secretions.

During gestation there is frequently a marked disturbance of the digestive organs: indigestion, marked nausea, vomiting and sometimes total arrest of digestive process. The secretions of the mouth in this condition become changed in a marked degree, and in some cases muriatic acid is found in them in addition to other acids, even when vomiting does not take place. It has been noticed for years that during gestation the oral structures and especially the teeth suffer greatly. One author said, many years ago, "A tooth for a child." More recent authors claim that the destructive process is often still greater than that during the period of gestation, all of which is due to changed nutrition and altered secretions, which in turn are due to indigestion or dyspepsia.

The effects of acid secretions upon the teeth are too well known to you as dentists for me to speak of them in detail. What interests you most is, Where and what are the causes? Nine times out of ten the causes are without the mouth. To point out some of these has been my purpose in this brief talk.

From our present standpoint, it is easy to see how ineffectual alkaline mouth-washes are for the relief of a patient who is suffering from acid secretions in the mouth which are destroying the teeth. It would be like pinching the tip of the tail of a snake to kill the snake.

Not unfrequently the dentist will say: "I have done the mechanical work to the best of my ability, yet I find that the fillings will not stand." All dentists have that experience. When the work is done well and the filling will not stand, or the teeth decay rapidly, the cause is not, as a rule, in the mouth; but the trouble is due to changed secretions in the mouth or lack of proper nutrition. The teeth must be properly nourished; if not, they become more vulnerable, are more apt to decay, and decay more rapidly when once started.

As to treatment.—To treat the patient scientifically, we must treat each disease on its own merits. It is not expected that the dentist will treat all the diseases that produce changes in the mouth, but it is his duty to be able to recognize the trouble and advise the patients to have treatment. By so doing, he confers a boon upon the patient and at the same time protects his own professional skill or reputation.

ART IN DENTISTRY.

BY J. A. ROBINSON, D.D.S., JACKSON, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

ART is a transcript of Nature. The more perfectly it is copied the higher will be the art. It has been asserted that the ideal is higher than the actual, but that can hardly be sustained, for we cannot go beyond or above Nature even in our thoughts. Mr. Alcott who has just passed away said, that art was the reasoning of things without the matter. Art is as natural to the human mind as religion; and religion is found everywhere. Some one has said "that the spiral goes upward and never returns." So art is an aspiration that is always seeking higher ideals of perfection. Artists do not make art; it grows out of an ideal to make something more perfect and better. The mere mechanic performs his labor by geometrical rules, he does everything by the square, the compass, and level; everything he builds must be like something some one else has builded. Everything in nature is built on strictly geometrical rules, but all things in nature differ from each other. It is in this grand variety that the greatest harmony is gained.

There is a great significance to the term "tooth carpenters" that we so often hear used to express the person who has a sign over his office saying *Dentist*, when he is merely a *mechanic;* and prosthetic dentistry expresses more fully our calling in supplying artificial dentures. The dentist has two great laws to fulfil. One is *form* or *condition*, and the other is *color*. In everything he does he is obliged to work under circumscribed conditions. First, the face or general contour of expression must be preserved or restored; and next, each individual tooth must possess character and life within itself. One would hardly think that all things in nature so closely correspond; the median and distal points are as largely in correspondence with the center as the leaves we find on all forest trees. The flowers (which are only modified leaves) all have this beautiful one sided harmony of nature that she has bestowed upon each individual tooth, and of the superior and inferior maxillary as a whole. This rule is to be observed not only in supplying artificial dentures, but in filling teeth with whatever substance is used to complete the work. It is within the region of probability that the dental art will arrive to such a degree of excellence within the next few years, that the higher art will be realized of preventing decay and restoring the natural organs to such a degree of usefulness that we shall hear no more about tedious and painful operations; and that extracting teeth, as Mr. Carlisle would say, will become an unpleasant reminiscence.

When we become a profession of artists we shall hear no more about the cheap dentist, and running down prices, for the real artist is so imbued with the love of his calling that he is above the little bickerings with his neighbors; but in his endeavor to reach his highest ideal, his pocket and his ledger will be the least of his concern about his work. This is one of the tests of perfect art and of the real artist to-day. Another test is to be found in pleasurable emotion. The satisfaction we experience in accomplishing and overcoming difficulties and imitating nature; and carrying art to the anticipated perfection will correspond to the satisfaction we experience in listening to the finest music or oratory, or of viewing the most perfect painting or statuary. When that time dawns upon us as the light we have already foreshadowed some of you may live to see, we shall be fit to be called *dentists*, and shall be *artists indeed.*

Art is made up of seeing, thinking, and doing. A lack of either faculty destroys our usefulness in art, and we find imperfection of finish in the work we undertake to perform.

If it be true as has often been asserted that dentistry has made greater progress and advancement in the arts and sciences than either of the older professions, it may be accounted for by the fact that we have never been surrounded and permeated by by those conventionalities that are incident to time-honored and moss-grown institutions that retard their progress. I allude particularly to the public press as a means of information, education and culture of the masses in this nineteenth century. The suppression of truth and information, and the love of money getting are the instruments that strangle our progress in true art and culture, and the advancement of our free institutions. The perils alluded to will destroy our usefulness and progress. No institution or profession can withstand such an ordeal as the suppression of public information from within, and the trusts and combinations from without.

DISCUSSION.

Dr. J. Taft: The paper that has just been read is of interest to us all. As you all know, there is a difference of opinion in regard to spreading the truth among people. Some favor one method, some another. Each claims his to be the best. The broader the culture of the people, the less occasion is there for any special presentation of truth in regard to the profession. That which the well prepared dentist is capable of doing will make a far better and far more lasting impression than what he may say of himself through the press. He will impress the public by his character. The good words of a newspaper last but a day. They are soon forgotten. A man's own work is what makes the most lasting impression. It may have been important some time ago to let the public hear from us and about ourselves in the papers—to specially enlighten them on dentistry; but it seems to me the case is now different. Is it necessary for a well accomplished young man to resort to special methods?

Dr. A. T. Metcalf: To bring the matter down to facts, let us see who are the men that advertise. Who is the professional, or rather so-called professional, doctor that comes to your city and informs you of it with flaming posters? Is he not often one who has been a failure at home? I have never been so poor a man or dentist that I have had to advertise my wares. The people will find us out without any advertising. I am astonished that any one who has been a member of the Michigan Dental

Association, who has been with us so long should have just discovered that he must advertise! I can to a certain extent overlook it in one of the members since he has a patent from which by advertising he can obtain a few cents. Yet it is too much of the style of a quack to do this. It is the quack who resorts to such methods.

Dr. R. Douglass: A man who does good work advertises himself. Several years ago the Michigan Dental Association circulated a pamphlet in regard to dentistry. We should do so again. But for a man to extol himself above his fellow dentists is wrong. To say that there are but two or three others in the State who can perform a certain operation, does not lift the profession any. A pamphlet like the one formerly printed should be distributed so as to let people know what can be done in the way of saving their teeth. It is a hard matter to persuade people that dentists can do anything but pull out their teeth.

Dr. J. A. Watling: I remember the pamphlet referred to. I am sure it did a great deal of good. But it was not an advertising dodge to get business. It had no name on it; advertised no one. But the advertising dentist claims he is different from others. He can do this or he can do that in a more easy and better way. If a doctor come among such people as do not know what dentists do, he had better move away. Now, advertising may be a very profitable investment as far as money is concerned, but stick to your office, do good work, and it will not be long before people will recognize your worth.

Dr. J. Taft: We wish to consider the best means of making the public acquainted with what we can do for them. There are certain things we should remain silent about. Do not talk of the different operations and such things as few can well understand. But tell of the care to be taken of the teeth. Tell what can be done, but do not mount a pedestal and say, "I alone can do this or that!" In this we find the great objection to advertising. *Ego* is too apparent. It is all *ego.* Then, nineteen-twentieths of the advertisements contain more or less of untruth. They are ordinarily for the money consideration. They are too mercenary. And more, though a man tell the truth and only the truth, he is after all in bad company. There are quack advertisements on every side of his. See the style of the advertisements. Keep out of such company. There are many and enough things to tell your patients: how to take care of themselves, etc. Suppose you do let the public judge you. Advertising tells against you. Discriminating people will compare you with other advertisers. Build up your business with good work so that you may years afterwards stand with a world-wide reputation.

Dr. J. A. Robinson: The great men of all times have been those of the greatest personality. I am not an advertiser myself, but I am in favor of the truth. The man who tells the reporter of his great operation advertises. We should be consistent. I believe in teaching by the sight. You all agree with me there. Thus we put diagrams in the papers. I never did it, but I always advocate the support of the truth.

Dr. J. Taft: Many advertisers tell more truth than ought to be told. I question the propriety of the thing.

[*Michigan State Dental Society Transactions to be Continued.*]

REMARKS ON TIN AND GOLD, OR "TG."

BY C. M. WRIGHT, D.D.S., CINCINNATI, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

Mr. President:—I have here in my hand a lecture published in Germany, and in the German language, from Dr. W. D. Miller, Professor in the Dental Institute of the University of Berlin,—which Dr. Miller sent to me after he had received the programme of subjects of this society. It is on the "Combination of Tin and Gold as a Filling Material for the Teeth."

It is a very interesting discourse on the subject, from one who has had unusual opportunities for observing the practical results of the combination of metals in the teeth of, I dare say, many thousands of patients. The lamented Dr. Abbot, of Berlin, had employed the combination for twenty-five years introducing it with many encomiums to his friends, and Drs. Jenkins of Dresden, and Sachs of Breslau, have employed it for a score of years and are still enthusiastic, if such a word can be used in expressing the convictions of such cautious scientific observers and careful practitioners as these, in its praises. It has, I may say, been quite extensively employed as an invaluable aid to operative dentistry by many eminent American and German dentists on the continent of Europe for many years. The interest taken in this subject of combination fillings is a comparatively new one in the United States. While here and there a man has employed tin foil in the bottom of a cavity and gold foil as the covering of the tin, in this country, I think we must admit that it has not become a recognized practice to systematically combine tin and gold for a special purpose and as a special material for filling special kinds of carious teeth. A few dentists here and there in this country have introduced the "Tg." upon their operating tables, but it is by no means universal. Now these gentlemen in Europe and these gentlemen in America who are known to have adopted this system in practice, have not done so for economical reasons. It is not a question of saving in the amount of gold. What then are the reasons offered for its use as a filling material? If we turn to Professor Miller's brochure we find two reasons given. One is the ease afforded to both operator and patient in the introduction of a tight or perfect filling, and the other is the number of valuable qualities which the combination affords as a material. These qualities are 1st, durability, equal to gold alone. 2d, non-conductibility; it is superior to gold alone and equal to tin foil. 3d, the peculiarity of this special combination of metals, from change which it undergoes in the tooth in the mouth after its mechanical introduction there—these changes affecting a secondary combination of the metals and producing a filling which in a short time becomes harder in the cavity than when first introduced.

To those of you who have never filled a tooth with "Tg." and then have never had the opportunity of cutting out this same filling a year aftewards, this latter quality of the secondary changes has no meaning, but to those who have and who know that the soft tin and soft gold introduced as sheets to-day, may become as crisp and hard to the excavator as a good amalgam, in the course of time, the *quality* of which we speak is a distinct one and belongs to no combination of metals with which I am acquainted, excepting those in which mercury is a constituent.

Dr. Miller in his brochure details clearly his own, Dr. Jenkins' and Dr. Sachs' methods of employing the material in the various cavities, and also methods of covering the "Tg." with gold, where this is desirable, (desirable not on account of hardness and durability but on account of appearance only.) The book is fully and uniquely illustrated, and I shall take pleasure in passing it around for your inspection of the figures which form clear diagrammatic lectures in themselves of the entire process which can be readily grasped by the experienced operator at a glance. (The figures were drawn by Dr. Adolph Witzel.)

In regard to this change which takes place in old fillings of the combination, Dr. Miller offers the following experiments and results. He repeats first: The mass of filling is found to have become hard and stone-like in character, and often in cutting into it, is liable to be mistaken for an amalgam filling by the inexperienced dentist, or rather by the dentist who meets this filling for the first time in a tooth.

We have been in the habit of saying that the change in color of the "Tg." filling is on account of the oxidation of the tin, but when we remember that the oxide of tin is white and not black we may well suspect that we have not made a correct statement of the real cause of the discoloration.

If you will lay a sheet of gold foil between two sheets of tin foil and place them in a one per cent. solution of lactic acid, and keep this at the temperature of the blood of the body for a few hours, at the end of this time you will hardly be able to distinguish the gold from the tin. The gold will have lost its yellow color and become gray like the tin. A few hours later the gold will have become brownish, and the whole mass will have become bronze or nearly black in color. In the solution a white flakey deposit will also be found which consists of the oxide of tin. On the gold the deposit, or layer of gray black, consists of the metallic tin. A great deal of tin is found also in the solution itself, but no gold in any appreciable quantity. This follows very quickly in a solution of lactic acid—which is a condition easily believed to be present in the mouth. This change in the metals is not found so readily when the experiment is made with acetic acid, and not found at all in a solution of butyric acid. It is also found in solutions of hydrochloric and sulphuric acids, but not at all in a solution of nitric acid.

If these experiments are made under pressure, that is, when the sheets of tin and gold are pressed together, the additional phenomenon of an adhesion of the two metals seems to occur, and the gold and tin cannot be separated. If one layer of gold is placed upon a layer of tin, only the under surface of the gold discolors while the upper remains bright. If a glass plate is laid over the gold, however, even the upper surface of the gold will discolor but not so rapidly. Doctor Miller gives the following explanation of the phenomena:

In the weak lactic acid solution an electric current is established between the gold and the tin. The gold is electro-negative to the tin. Hydrogen accumulates on the surface of the gold, and oxygen on the surface of the tin. The oxygen unites with the tin and forms oxide of tin. The electro-positive oxide of tin meets the electro-negative gold, where it is deprived of its oxygen by the hydrogen found there and is thrown down as metallic tin on the surface of the gold. He accounts in this way for the facts that when the upper surface of the gold is uncovered it remains bright, because the hydrogen disappears from the surface as soon as formed and no reduction of the oxide of tin occurs, and that under an indifferent cover, like glass, hydrogen is, in a degree, prevented from escape, and so the surface of the gold becomes slowly covered by the same process.

The same thing occurs in the mouth, and yet while the gold seems entirely to have disappeared and a trace of it cannot, in some cases, be found by the microscope in old fillings, still by a prolonged treatment of the filling with nitric acid it is found not to have been changed and gold can be recovered.

Another point of practical importance to the dentist is, that when the tin and gold have become moistened before the experiments with the acids, the entire action seems to be hastened, and this is practically shown by filling in the mouth. Moisture is not detrimental to this combination as it is to all other materials which we employ for the filling of teeth, and in nervous patients where great irritability or sensibility exists in the mucous membrane of the gums, or tongue, or palate, and where even the contact of bibulous paper, or the finger, or the napkin, or rubber dam causes distress, a tin and gold filling can be successfully made even in the presence of considerable moisture and yet possibly be a better filling than one introduced in a very dry state, as the electrical changes are hastened and hardening occurs sooner in the former than in the latter. Careful experiments have been made by Witzel and others in regard to this point by dipping the first pellet of the "Tg." in different solutions, and afterwards covering them with dry pellets and pressing them in, so that the moisture would penetrate the filling, and observing the rapidity of the changes in hardening, etc.

One word more. In regard to the late hypothesis offered by an American dentist in a late journal on the possibility of an electric current being established between two metals in one cavity which is capable of killing by lightning the poor little bacteria which may happen to be hiding in the neighborhood of the combination filling, Dr. Miller has not expressed an opinion in his book, but if the society will keep my words to themselves, I will repeat that in a private postal card Dr. Miller has expressed his belief that the lightning in this case need not scare the bacteria from the neighborhood, as it can have no greater effect upon them than a "bread pill would have upon a rhinoceros."

DISCUSSION.

DR. WRIGHT: Personally have had some fifteen years experience with "Tg.," and in its use prefer the roll of tin and gold to be twisted or rolled into a rope with the gold and tin showing like the stripes on a barber pole, in equal parts; this separates it more easily from pellets of gold alone, or cylinders of gold alone. Have used it in cylinders made by rolling a strip of gold and tin with the tin inside sometimes and sometimes outside. Use this always without the dam. Have also used "Tg." at the cervical borders of large proximal compound cavities with more satisfaction than any other material at these vulnerable points. Employ it in children's teeth to some extent when red gutta-percha does not seem to meet the demands of the case.

Also find it a most valuable material for sixth year molars in young patients.

The only objections that can be brought against the combination is its color, that is, the color which it assumes after a while. It does not discolor the softest tooth, however, at all, (and its not being strictly a plastic filling). From careful observations for a series of years I must add my testimony in favor of the Tin-gold as an easy way of saving teeth by filling, and as having important qualities not possessed by gold alone or tin alone.

It is more easily inserted than non-cohesive gold even, and with less force and pressure becomes harder and more durable. That is if we should take the same quantity of soft gold and apply the same amount of force we should not make as perfect a filling as we would with this "Tg." The gold alone requires more pressure, for it must be made hard enough for use by firm packing, while a comparatively soft "Tg." filling will become hard enough to resist mastication by its own qualities.

Dr. Cravens had used the combination of tin and gold as an experiment in 1876 and 1877. He had replaced the fillings, for the material seemed to wear away, was black, and in some cases there was a tendency to form islands by contraction at different points. The most practical method that he had found for using the two materials was to use the tin in mass, and the gold in mass; filling the cavity partly full with tin and building the gold upon this. He thought the preservation by tin was due to its soft working qualities and adaptation to the inequalities of the cavity. He used it even on the palatine portion of incisors.

Dr. Sage: I have noticed that some writers say that number two tin should be used with number four gold to get just the proper combination; but writers differ on this point and the statements become confusing. We must have no rebounding of the instrument, but have the material in such condition that it will stay where it is put. It seems to me that we are also in error in building up with cohesive gold, for the attachment is not reliable unless undercuts are made.

Dr. Conrad said that a short time since Dr. Eames had a patient of Dr. Herbst's. There were about fifty of these combination fillings in the mouth. In ten or twelve the tin had disappeared entirely, in two or three, partially, and the other fillings were in such a condition that they all had to come out. The failure was attributed to the kind of tin used in the operations.

Dr. Betty requested that all old gold-and-tin fillings be sent to him for analysis and investigation.

Dr. Watt said that in some cases the action brought about by the combination caused uneasy sensations or pain in the tooth and sometimes so severe as to cause sleeplessness. He stated that it was not thoroughly understood just what the trouble was, but he was of the opinion that it was *thermal electricity*. He reported a case where a tooth was replanted and regained complete nerve union.

Dr. McKellops had seen much of the combination filling, but there was nothing that gave him more satisfaction than gold.

He thought non-cohesive gold was just as adaptable as tin, or tin and gold. This could be proven by experiment. Take tin and adapt it to the wall of a cavity, and then adapt pure gold to the same wall, and you will perceive that the hair lines on both are precisely alike. He often used very large cylinders of No. 4 non-cohesive gold with profit.

Dr. Taft: We usually have less gold en masse under the plugger than of the tin; and while it can be as perfectly adapted as tin, it does not work quite as easily and requires more time.

PROFESSIONAL PATENTS.

BY W. STORER HOW, D.D.S., PHILADELPHIA, PA.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

The discussion of any subject is usually clarified by a definition of the title or terms by which it is designated. In the United States of America a patent is an official document which imports that the patentee is the legal owner of the property therein described, and the inventor is thereby legally constituted for a specified term of years the absolute owner of that property, subject indeed to any claimant who can prove himself to be the original and *first* inventor of the property aforesaid. Contingent upon this risk, or "bar," as it is termed, and the further personal bar of abandonment by neglecting to make application for a patent within two years from the public use of the invention, the right of an inventor to his patented property is the clearest and most unassailable right to property on earth, and is so maintainable in law and equity through the highest courts of this country. It is therefore important to keep in mind these two fundamental facts: First, that a new and useful invention *originates* in the inventor; second, that the invention is *property*, the legal title to which is originally vested in the inventor.

The term dental patents is applied to such patents as relate to inventions connected with the *practice* of dentistry. It is important to notice that these inventions are not designed for the use of the laity, but are for use as improvements in practice by members of the dental profession, and now that dentists are formally included in the general designation of members of the medical profession, it is pertinent to our purpose to consider the subject of professional patents in general. The distinction just made is therefore of consequence as limiting the discussion to inventions intended for professional uses; leaving in abeyance without prejudice the subject of devices designed for use directly by the laity.

It has been commonly assumed by medical men that the primary purpose and function of a member of the medical profession should be the relief of such suffering, or diseased, or disabled members of the human family as should have need of and require his professional services. This assumption might have been permissible in part in the days when the priests were also physicians by the assumed right of a divine calling, and this, as well as many other subjects, is greatly befogged through such antique assumptions of authority, etc., by divine right. Modern thought and action are even now adverse to all such assumptions, and the primary principle is becoming recognized that every man is a king under God, and that no man has, or can rightly have, other than humanly delegated authority over his fellow-man. Government by consent of the governed, is the only just rule for the ruler and the ruled. Professional pretensions to peculiar privileges, practices, and prerogatives by virtue of an assumed superiority of vocation, that places its laborers above any pecuniary compensation commensurate with the real value of their services, form the fundamental fallaces which underlie the delusions so prevalent in the minds of both professional men and laymen on the subject of professional patents. It is certainly not true that the professional services of the physician, or surgeon, or dentist are beyond price because they are preservative of human life; for so also are the services of the food-raiser, because food is essential to the preservation of human life,—*ergo*, food is of inestimable value! Nor is it true of the doctor any more than of the farmer that he works without expectation of payment or hard cash for his work. Such assumptions are the veriest stuff and nonsense; for whenever and wherever men of any calling work for a living they work for pay,—honorable pay, if the work is honestly done. On the other hand, men who do not work for a living are either gratuitous laborers or lawless loafers; and to this latter class belong the whole group of pretenders from kings to beggars.

Gratuitous service of any kind, under any circumstances, implies the possession of superior abilities by the servant, and a corresponding inability on the part of the served, or, the willingness of the latter to receive service which he is himself able to perform. The inherent degradation of this last disposition it is difficult adequately to describe; and to this subtle debasement of the real manhood of man is owing to the inability of the present generation to rise to the true nobility of manliness that must always, in all times and all places, refuse to receive something for nothing if one be able to make any return. Helplessness is, of course, a bar to all self-preservative action, and a man is then simply compelled to receive what is given. A work of love is always and only rewardable by love, and we are not unmindful of the Christian faith that works by love as the highest form of a divinely inspired activity. But the present considerations are based upon and strictly relative to the working fact that men are not yet generally doing business on pentecostal principles, and until the legal fences are all down and the débris cleared away,—the law having vacated its tutorship after bringing all men to Christ,—we should aim to do all things lawfully, with strict regard to all the rights of our neighbors.

Among these rights we have shown that patent rights are of the first order as initiating clear titles to property in inventions. We have also shown that when the inventor is a professional man his property may be of value to other professional men, who may buy it to aid them in their professional work. It has furthermore been seen that professional men properly and primarily work for a living,—*i. e.*, for money in return for services,—as it is eminently right and fit that they should do. The claim that professional services are essentially different from other services for pay is erroneous, as has likewise been shown.

A clear conclusion is, therefore, that the professional man has no more right to the free use of the patented property of his fellow-practitioner than to his other property,—as, for instance, his house, or his horse, or his case of instruments. He might in an emergency borrow anything that is his neighbor's, but to claim the right to use in the practice of his profession a professional invention, on the ground that individual professional property is, *per se*, common professional property, is, assuredly, an untenable proposition. Equally so is the commonly received doctrine that it is unprofessional to patent inventions designed for professional use.

To secure a copyright on a book which is designed for professional use is not now deemed unprofessional, as indeed it ought not to be; but will any right-minded person pretend that copyright property is essentially different from patent-right property? They are certainly identical so far as they are original creations of inventive minds, and as such, when secured to the inventive authors by due process of law, are indubitably *property* in the highest and strongest and clearest titular significance of that term. It follows, therefore, that a book, an instrument, or an appliance originated and designed for use by a physician, surgeon, or dentist *professionally* may be copyrighted or patented by its inventor without in any manner or degree derogating from his standing as a professional man. The instrument, as well as the book, is intended to facilitate professional practice, and there is no valid reason why the professional inventor should *give* his invention to his fellow-practitioners any more than that the professional writer should send every fellow a copy of his book with the "compliments of the author." If the book is designed and adapted to promote professional practice, and so alleviate suffering and prolong life, then, on every premise and by every argument used in opposition to professional patents, the book belongs to the profession, and to copyright it or publish it for the personal profit of the author is,—well, all the delusive and deceitful and debasing drivel that has been poured out on inventors by copyrighting authors, and other inconsiderate or pecuniary interested members of the medical profession. Possibly some introspection is necessary to disclose to many minds the motives which really actuate them when they raise such an outcry against professional patents. They want the best instrument or medicament obtainable, and they want such at the least cost, or without cost if possible. Success in practice depends upon their superiority of repute as professional men. Hence they want the best aids to practice within their reach; and if those aids are to be had only by paying a sum, a part of which goes into the pocket of an inventive fellow-practitioner, a part to the retail dealer, a part to the wholesale dealer, and a part to the manufacturer (or publisher), then they have a grievance against the inventor, who, as a professional brother (?), ought to give away his part of the profits arising from the sale of his own original property! Why? Well,—because the invention enables the practitioner to do more for suffering humanity, and get more money from suffering humanity, than he could do or get without the invention! The inventor may get any amount of honor (?), but must get no cash for his invention, which belongs to everybody else because the inventor is a professional man; and in the professions, every brother-practitioner has the right to take for his own professional use and profit anything which his brother has, or can invent, that is worth taking!

The notion that a professional man has gratuitously received his equipment, and therefore is in honor bound to give all he has and knows to his professional brethren, has no foundation in fact; for the office tuition, the copyrighted books, the college expenses, etc., at every point of his preliminary progress have cost him cash (or its equivalent), which in great measure went into the pockets of the most prominent professors, who are the loudest in professing the greatest concern for the protection of the profession from dishonor, by the patenting of professional inventions. The fact is patent that every medical or dental graduate has been called upon for cash in payment for the professional instruction he has received, and he in turn expects to receive cash for his outlay, just as any other business man expects a return for his investments in knowledge or the products of knowledge.

In the light of to-day, and in the United States of America, it is absurd to assume that the professions are other than departments of business, and distinguishable simply by name from the departments of agriculture, mechanics, merchantry, banking, etc. The other assumption, of the priceless value of medical knowledge as a ground of superiority over the priceless knowledge of the farmer, we have seen to be baseless.

An incidental demonstration of the fallacy of these assumptions has been wrought out in the practice of dentistry, which has by a process of synthesis started from the basis of a business, and by the application of business methods worked its way into the medical profession.

It seems capable of demonstration that the great advances made by modern dentistry in the United States are largely due to the patented inventions of dentists. The writer is free to admit that his own slight participation in this line of progress may unwittingly warp his judgment in this regard, but he is nevertheless firm in his conviction that the opinion is sustained by the facts. In this connection it appears proper to be still further personal in an allusion to the writer's later opportunities for becoming conversant with some correlative phases of the subject.

It is well known to members of this society that the writer was a practitioner of dentistry in this city for nearly thirty years,—less the interval of the war period. The last five years have been passed in Philadelphia, in professional connection with the principal dental manufacturing company of this country,—or, he may add, of the world. Opportunity has been thus afforded for the consideration of dental patents in many aspects unfamiliar to the ordinary practitioner; indeed, the services rendered by the writer have been frequently in the line of a patent expert for the determination of questions concerning inventions of that class. Under those circumstances, and under the present circumstances, when surrounded by old friends and neighbors, a freedom of expression is permissible that might otherwise be deemed inappropriate. Your essayist, therefore, feels at liberty to say that, in five years of confidential and intimate relationship with the heads of the great manufacturing house referred to, he has seen in the conduct of their business not only nothing to condemn, but contrariwise, the most commendable consideration of the interests of dentists, dealers in dental goods, clerks, salesmen, workmen, workwomen and employees of every kind; combined with a general business conduct based upon the highest principles of commercial honor and probity. There need be no hesitation in the use of superlatives when speaking of the sterling qualities of the men who control this great concern. They reflect honor upon the profession which they—following in the footsteps of the revered founder of the house which bears his name—have sedulously sought to promote, and have been largely instrumental in advancing to its present proud position among the noble and learned professions. Doubtless it is due to the writer's experience in the service of this company that he has reached the firm conclusion that honorable motives and conduct are not confined within the limits of the so-called honorable professions, but that the merchants, the mechanics, and the workmen of every class and degree are honorable, and to be honored whenever and wherever they acquit themselves like true and faithful men.

It is furthermore to be said that the president of the White house, as editor of the *Dental Cosmos*, has rendered inestimable service to dentists and the dental profession during his connection with and conduct of that journal from its beginning, thirty years ago. What is implied in the personal supervision of three hundred and sixty monthly issues of a journal whose every page was to be and has been resolutely kept free of matter not related to dentistry, nor expressed in good, clean English, no one can know but the inflexibly faithful and thoroughly competent editor. What the profession and the world knows is that the *Dental Cosmos* is an honor to dentistry, to journalism, and to the professional business men who have made and kept it foremost and highest.

The elevating nature of dental patents was primarily recognized by this house, and large sums were spent in acquiring and developing them. Few persons are aware of the rapidity with which inventions have followed one another under the stimulus of a reasonable expectation of reward for such extraordinary exercise of thought and skill. Yet fewer persons know what a costly thing it is for the manufacturer to change or discard devices which, when just ready for the market, become improved, or superseded, so that the new stock is rendered comparatively valueless. Just at this point the nerve, and sagacity, and determination of this company to put forth the *very best* goods, that could be made, have time after time been made manifest, and thousands of dollars' worth of superseded things have been destroyed, or shelved without the slightest hesitation, or attempt to realize by holding back the new until the old have been sold. The "monopoly" against which such thoughtless outcries have been made is of untold benefit to dentists because both able and willing to discard the old good things immediately upon the advent of the new and better ones. So, too, have the foremost dentists always done, and that is the secret of success,—the BEST, at whatever cost. That is also at once the inspiration and hope of the inventor.

To summarize our conclusions, it may be confidently declared that:

First.—An original and first inventor has *absolutely produced* the *property* to which he is entitled by his patent.

Second.—It is strictly right, equitable, ethical, just, and proper for an inventor who is either a clergyman, lawyer, physician, surgeon, dentist, chemist, author, composer, or worker in any of the departments of business termed professions, to patent his invention, whatever its object, if, and if only, it be useful to such of his fellow-men as may properly desire to use it lawfully.

Third.—The outcry against professional men who do, or countenance those who do, obtain patents for human life-saving or life-promoting inventions comes in every instance from men who either do not understand the subject, or are directly or remotely interested in obtaining the use of the invention gratuitously, or without due process of law.

As products of thought, the movable types, the cotton gin, the steam engine, and the electro-magnetic telegraph have been directly and indirectly instrumental in saving and promoting life in possibly far greater degree than all the medical prescriptions of the contemporaneous physicians whose diplomas invested them with exclusive rights and privileges as a means of making money; yet these same professional diplomatists would proscribe a fellow-prescriber if he were to obtain a Patent Office diploma as the originator of a life-saving invention.

If, therefore, common sense, reason, argument, logic, demonstration, humanity, beneficence, lawfulness, and righteousness are not all on the side of the professional inventor and patentee, then his case only needs restatement in embossed letters that may enable the wilfully blind to mentally see the affirmative facts that are indubitably clear to the mind of an unprejudiced investigator. The great number of persons to whom such an invention should prove a priceless possession might be a stimulus to produce ingenuity, were it not for the amazing probability that nearly every one of them would bring forward either his professional brotherhood or his great need of the professional equipment as an unanswerable plea for the gratuitous bestowment of the property upon himself; the *honor* of being the inventor of so useful a device sufficing (of course) as an ample reward for the inventor in lieu of the filthy lucre fees which would be what the practicing professor would obtain from its use.

The phrase "empty honors" is certainly a significant one, and must have been devised for a professional inventor, because he, of all other men, would have been, as in modern times, sure to have received neither cash nor substantial gratitude, however valuable his invention might have proved to his fee-earning brethren. History is full of examples uniformly tending to show that, if the inventor could not *compel* the recognition of his property rights in his invention, he has not only been denied compensation in, but has often suffered persecution, and even martyrdom.

In these later years, when every other department of practical knowledge and labor is making such progress by means of patented inventions that the Old world stands amazed and almost awe-struck at sight of the marvels wrought in the New, is it not time for the old professions to fall into line with the new, and declare that henceforward every incentive shall be held out to the ingenious and skillful professional man to invent or discover human life-saving and health-promoting means and devices, with the assurance that his patent rights shall be respected, and due honors be paid with the cash for the privilege of professionally using his invention?

Will it not be an ascent to a higher plane of thought and action for "doctors" (teachers) to teach that professional honor is not a cloudy abstraction, nor a clannish distinction, nor an exclusive assumption; and that, in particular, a doctor of medicine or surgery is a person called to and trained in the professional business of the readjustment and repair of disordered human bodies for a cash consideration, due and to be paid upon the completion of the service?

If it be objected that this view degrades the practice of a profession to the merely mercantile prosecution of a business, it is at once to be said that the objector begs the question by the false assumption that a business is beneath a profession, whereas an honest business honorably conducted puts the business man above beggary of every kind. He never begs, but buys and sells with the most scrupulous regard to the property rights of everybody; and, to his great credit, it is to be said that there is among men no higher working standard of honor than that of the business man whose simple statement of working formula is, "I will sell this to day for so much"; and when his fellow-merchant at hand, or a thousand miles away, replies, "I will take it at your price," that practically completes the transaction, and the property will be transferred, although only their words of honor will have passed between them, and although, also, prior to the transfer of the property in fact, its value should change to the amount of many thousands of dollars; the business man's word is actually as good as his bond.

There is, therefore, relevancy to the subject under consideration in the writer's illustrative allusion to the well-known business house in which he has learned many instructive things concerning the correlations of professional honor with business honor, and as common rules of practice, the terms appear to him to be not as yet synonymous.

As a matter of fact, it is proper to state here that, aside from the young lady type-writer, no person either nearly or remotely connected with the business house referred to is aware of even the intention of the author to write or read a paper upon this subject; and, therefore, the responsibility for the views and sentiments herein presented rests entirely and exclusively upon him.

As supplemental to the foregoing paper, the author adds to this publication of it on his own account, the following extract, in order that the reader may verify the irrefutable fact that the exclusive copyright and the exclusive patent right are fundamentally identical in their establishment under the law which was intended "To promote,"—and has to a marvelous degree practically promoted,—"the progress of science and useful arts."

So far as the author is aware, the copyright and the patent right are the only instances of the constitutional creation of property in materialized or embodied thought.

Article I., Section 8, in the Constitution of the United States declares: "The Congress shall have power" . . . "8. To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Also, "18. To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this constitution in the government of the United States, or in any department or officer thereof."

The universal language is the one that nobody uses, and even he does not use it intelligently nor intelligibly. It is called "Volapuk," whatever that means. But seriously, give our orthography proper revision, and English will soon be as nearly universal as the times demand.

Editor's Specials.

"Write the Vision and make it plain."

DOUBTS AND CERTAINTIES IN SCIENCE.

Doubts may be developed into certainties, and suspicions may be traced along their legitimate lines till they terminate in facts. But science is not advanced by holding forth as already established those things which are still doubtful and uncertain. Let the doubts be fully expressed, the suspicions set forth as clearly as possible, and good may result; but let not claims be made in regard to them outside of or beyond their true nature.

We sometimes fear that a few of our investigators are not as careful as they ought to be in discriminating between what is known and what is guessed at. Some readers of the Journal will remember a scene that occurred long ago, when microscopy was somewhat new in the dental profession. At an important meeting Drs. Atkinson and McQuillan expressed different opinions as to what was seen on a certain slide, through the microscope,—not what each had seen elsewhere and at other times, but as to what was to be seen by alternate lookings at the same slide. Both had good eyesight, and were familiar with the use of the instrument; and both had the confidence of the profession. Did this show definite determination? or did it not rather teach the comparative uncertainty of microscopic research with high powers? Did it not suggest that very close and repeated observations were required in order to warrant positive statements? It is not strange that, at the late meeting of the Miss. Valley Association, Dr. Atkinson, alluding to this very class of researches, advised his hearers not to believe implicitly that investigators always see what they describe.

Again, that prince of microscopists, Prof. Heitzman, described something as he saw it. Other coöperating experts testified that what he claimed was a deception, caused by want of proper adjustment.

Another case: Less than two years ago, the lamented Walter A. Dunn, of world-wide fame as a microscopist, prepared hæmal crystals from a fresh drop of his own blood, and also from a portion of a blood clot taken from the cranium of a murdered woman. The respective crystals were put on separate slides, and when submitted to the microscope, Dr. Dunn regarded the experiment as satisfactory and conclusive. To our own eyes, not unfamiliar with microscopic research, and somewhat acquainted with the subject of crystallization, the two slides showed crystals as much alike as white beans or mustard seeds. There was no observable difference. Yet two men, both claiming to be familiar with the microscope, one having LL. D. added to his M. D., and the other a professor of histology, etc., in a medical college, declared that while the objects on one slide might be the crystals claimed, those on the other bore no resemblance to them—no likeness to those on the other slide—and gave no evidence of being other than accidental matter obtained from débris. We were all on oath; and these investigations did not require high powers.

Not long ago, our micro-trinity, Heitzman, Bödecker and Abbott, who are entitled to and have the confidence of us all, agreed that they saw something, (no matter what,) in or through the microscope; but Dr. George Allan, long ago our pupil, but for a long time our teacher, with the assistance of the microscopist of Harvard University, could not see it in that light, though using the same slide. When "the stars in their courses" fall out, on which side must we, "tallow-dips" rally?

For present purposes it matters not, in this affair of three to two, which is right. We are trying to convince our readers that microscopic revelations, as yet, cannot, in many cases, be so accurately and reliably interpreted as to warrant the positive assertions of some bacteriologists and very many microscopists. And that microscopic research in reference to microbes has, as yet, all the uncertainties of similar investigations in other directions seems virtually admitted by our friend, Dr. Black, when he says, "These microbes are the smallest of microscopic objects and were, of course, unseen until very recent times." And yet it is common to describe them in detail with as much assurance, and more positive assertion than any would think of using in the description of horses, cows and sheep.

Some time ago the *Medical Record* had a brief item calculated to excite caution in the line of thought under consideration, and caution is all we ask. Abandon the investigations? No! And don't cease to report experiments and impressions. But cease to claim demonstration and certainty for mere investigation and suspicion. But here is the item from the *Record:*

"Dr. Mariano Semmola on bacteriology and its therapeutic relations, says: 'We know very little of the normal condition of the blood, and biological chemistry is still in its infancy. Man cannot separate himself from these millions of parasites among whom he lives. That bacteriology may be a guide in the cure of disease, we must not only learn all we can of the microbe itself, but, more important than all, must ascertain all that is possible of the conditions of the field of culture. The science of the present knows nothing of the conditions of these fields of culture in living organisms. It is thus evident that in the present condition of bacteriology it cannot be taken as a guide for the treatment of internal diseases. The older schools of medicine spoke of organic dispositions or tendency to such and such a disease. This expression had no meaning, but it expressed the fact. When bacteriology speaks of a need for a special field of culture it says the same thing, because we do not know of what the field of culture consists. Therefore this cannot be called a science, because a science is never composed of unknown things; it goes from the known to the unknown. If a man supposes a fact instead of demonstrating it, the phenomena of Nature are not reproduced. When he resorts to hypothesis, the power of man disappears. If Nature's laws are not respected, the telephone does not work, the electric light does not flash, the steam engine stops. The doctor, then, is the only one who pretends to become the master of Nature without knowing her laws.' Referring again to the failure of medicine to follow up a discovery in the scientific way with thorough research and demonstration, and its tendency to accept conclusions quickly. Professor Semmola said that 'modern bacteriology may lead the way to the most fruitful field of inquiry in the future, but for the present it has produced no practical results in the cure of internal diseases.' It has not, he claimed, been demonstrated in what measure microbes are the causes of diseases. He, therefore, hoped that the younger generation would continue experimental researches with the thoroughness of method which the great masters have transmitted to us. They must renounce their preconceived ideas in medicine, and interrogate Nature without torturing her. Scientific independence must be preserved. They must not proceed without measuring their steps. He trusted that his desire for scientific independence in such researches would be echoed in this land of independence."

"If a man would be wise let him think, *think*, THINK." And let each one think for himself, and not blindly follow others. The great apostle, once Saul of Tarsus, spoke by inspiration, yet the Bereans were commended as "noble, * * * in that they * * searched the scriptures daily whether those things were so." Listen, like them, "with all readiness of mind," but search and verify.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

APPLYING THE DAM.—Where the teeth are in close contact, a little soap placed on the rubber dam will facilitate its application.

VULCANIZER PACKING.—Heavy pasteboard makes a good packing for vulcanizers. Where vulcanizers leak, dust on a little corn starch and you will find it effectual in stopping the leak.

ANTIPYRINE SOLUTIONS.—Antipyrine and phenol are incompatible, a precipitate being produced where their dilute solutions are mixed. Phenol, therefore, cannot be used to preserve solutions of antipyrine.

TO PRESERVE A SYRINGE PISTON.—If the leather on the piston of a hypodermic or other syringe becomes dry, which it should never be allowed to do, soften it in cold water, never in warm, then soak it well in glycerine.

INJECTING ALVEOLAR ABSCESS.—DR. E. C. BROWNLEE gives his method of treatment as follows: First fill the cavity of a pulpless tooth with a packing of common vulcanizable rubber; charge the hypodermic syringe with carbolic acid and alcohol; push the pipe through the rubber, and inject the abscess without any leakage around the pipe.—*Cosmos.*

HEATED INSTRUMENTS AND GUTTA-PERCHA.—DR. FLAGG says: It is very necessary that the end of the packing instrument should not come in contact with the flame of the lamp. If it does, the touch of the instrument smirches the gutta-percha. The instrument must either be wiped off, or, better still, have the gutta-percha warmer so arranged that the blaze does not touch the points.

TO WASH CHAMOIS SKIN.—Use a weak solution of soda and warm water, rub plenty of soap into the leather, and allow it to remain in, soak for two hours, then rub it sufficiently, and rinse in a weak solution of warm water, soda and yellow soap. If rinsed in water only, it becomes hard when dry and unfit for use. After rinsing, wring out in a rough towel, and dry quickly, then pull it about and brush it well.—*Scientific American.*

CEMENT FOR BOTTLES.—A new cement for bottles containing very volatile liquids, which is easily prepared and applied, and which is said to prevent the escape of the most volatile liquids, is composed simply of very finely ground litharge and glycerine, and it is merely painted around the joint between the bottle and the cork or stopper. It quickly dries and becomes extremely hard, but can be easily scraped off with a knife when it is necessary to open the bottle.—*Pacific Record.*

THIORESORCIN.—If the alkali salts of resorcin in aqueous solution are heated with sulphur (110 resorcin, 70 sulphur), a perfect solution of the sulphur takes place, with the formation of thio-substitution products of resorcin. The thioresorcin is precipitated with acid, dissolved in carbonate of sodium and reprecipitated, when it is quite pure. This resorcin derivative is nearly insoluble in water, only sparingly in alcohol, and is a feebly yellow product. It decomposes before melting, and forms easily soluble, yellow salts. It is recommended as a substitute for iodoform.—*German Chem. Ztg.*

POLISHING RUBBER PLATES.—DR. H. W. RAY says: After the usual filing, scraping, sand-papering, and use of pumice, I wash and wipe the plate dry, take it in hand with concave side up, and with a camel's hair brush paint it all over with sweet oil, then apply about a teaspoonful of dry plaster, and rub over quickly and briskly with the thumb. In a few minutes a polish is produced that cannot be equalled with the lathe. Polish above the gums in the same way, using the forefinger full length instead of the thumb, wash the plate with soap and water, then use alcohol to remove any remaining grease.

TEST FOR ALCOHOL IN CHLOROFORM.—A. JOLLES, in the *Pharm. Centralh.*, in examining chloroform for more than 1 per cent. alcohol (the allowed amount), proceeds as follows: Into a test tube containing the chloroform under examination he puts a few pieces of manganate of potassium, K_2 MnO_4—no reaction whatever ensues if the percentage is 1 or less. If the chloroform contains 2 per cent. alcohol or an equivalent amount of other oxidizable bodies the bottom of the test tube, where the manganate had been in contact with it, will be colored yellowish brown, the spots adhering tenaciously to the glass. The intensity of these spots increases with the percentage of alcohol. This reaction depends upon the fact that the manganate much sooner than the permanganate of potassium is reduced to the manganite.

HOT AND COLD FOODS.—DR. UFFELMAN, having studied foods as affected by temperature, says that cold food and drinks lessen body temperature; the lowered temperature is a genuine loss of heat.

The ingestion of cold substances lessens the irritability of the diseased stomach.

Cold substances raise the tone of the stomach, increase intestinal peristalsis, they promote the passage of stools, and in dysentery cause an increase of pain.

Cold foods and drinks increase the liability to cough.

Warm foods raise the temperature slightly and promote perspiration.

Hot foods and drinks are more stimulating than cold.

When often given, hot foods lessen the tone of the digestive tract.—*Wiener Klinik.*

REPAIRING A CRACKED PLATE.—DR. ABBOTT, of Ill., says: Occasionally I have to repair a cracked plate, whenever I do, I use what is known to jewelers as earring wire—it is a brass wire gold plated—I proceed in the usual way till about to pack in the new rubber, when I make a hole sufficiently large to receive the wire each side of the crack as far away from the crack as the outer edge of the patch, then take a piece of the wire and bend one end at a right angle; get the distance between the holes and cut the proper length and bend the other end at a right angle, also making a broad staple. I put the ends in the holes lettting them go clear through the plate unless it is quite thick, then pack the rubber over and proceed as usual. If the wire projects through the plate cut or file it off.

In this way a plate may be repaired and be as thin when done as it was originally, and stronger; thus avoiding a clumsy patch. Two or more of such staples may be put in as the case demands.

Value of Rest.—There is no better preventive of nervous exhaustion than regular, unhurried muscular exercise. If we could moderate our hurry, lessen our worry, and increase our open-air exercise, a large proportion of nervous diseases would be abolished. For those who cannot get a sufficient holiday the best substitute is an occasional day in bed. Many whose nerves are constantly strained in their daily vocation have discovered this for themselves. A Spanish merchant in Barcelona told his medical man that he always went to bed for two or three days whenever he could be spared from his business, and he laughed at those who spent their holidays on toilsome mountains:

One of the hardest-working women in England, who has for many years conducted a large wholesale business, retains excellent nerves at an advanced age, owing, it is believed, to her habit of taking one day a week in bed. If we cannot avoid frequent agitation we ought, if possible, to give the nervous system time to recover itself between the shocks. Even an hour's seclusion after a good lunch will deprive a hurried, anxious day of much of its injury. The nerves can often be overcome by stratagem when they refuse to be controlled by strength of will.

Jewelry Repairing.—To repair a ring, the shank of which requires soldering, bury the head in a crucible full of wet sand, place a small piece of charcoal against one side, coat the break, previously cleaned by filing or scraping, with borax, and charge with solder; blow a flame against the ring and charcoal until the solder runs in. For articles which require to be protected against discoloring in the process of soldering, coat them with a mixture of burnt yellow ocher and borax, adding a little dissolved gum tragacanth to make it lie all over; allow it to dry, then charge with borax and solder, and heat sufficiently. Boil out in weak pickle made of nitric or sulphuric acid. One important point is to wash the piece well in hot water, with a little ammonia in it, before attempting any repairs. This removes all dirt and grease, which, if burned on, cannot be removed.

If the article be of colored gold, boil out in pickle made of muriatic acid, and never coat with any protecting mixture. The solder must vary in regard to fusibility according to the quality of the article. For repairing most filed work, very easily melted solder is required, which may be made of one ounce of fine silver, ten pennyweights of hard brass wire, adding two pennyweights of zinc just before pouring; or, to make it more fusible, use bar tin instead of zinc; or, for stronger silver solder, use only the silver and brass. For repairing most bright gold work, use gold coin, three pennyweights; fine silver, three pennyweights; fine copper, two pennyweights. For colored work, fine gold, one pennyweight; silver, seventeen grains; copper, twelve grains; hard brass wire, two grains.—*Jewelry News.*

METHYLAL.—The *Medical Press* gives the following summary: 1. Methylal is hypnotic and antispasmodic.

2. Its action lies between ethylic alcohol and ethylic ether. It may be looked on as a volative alcohol, and resembles closely pure methylic alcohol in action.

3. It can be administered by inhalation as vapor, by hypodermic injection, and by the mouth in aqueous solution.

4. It reduces arterial tension, and by local action excites glandular activity.

5. The sleep it induces is not profound unless the dose be excessive. It is quickly eliminated, and leaves no serious effects. It causes no vomiting or stomachic disturbance.

6. A fatal dose by inhalation kills by complete relaxation of the muscular fibres of the heart, leaving the heart distended with blood and the vascular organs intensely congested.

7. It combines with ether, alcohol, amyl nitrite, and many other remedial agents with which it acts in concert, while it equalizes their action by reason of its own solubility.

8. Its tendency is to maintain the fluidity of the blood, and it may, therefore, be of service in combination with ammonia.

9. It promises to yield a safe and effective anæsthetic mixture in combination with ether.

10. It reduces the animal temperature, but not to the same degree as common alcohol.

11. Used as an anodyne it passes out of the body without producing organic injury when not often repeated.

12. But, like all other bodies of its class, it must be given in increasing quantities in order to keep up its effects, and it would soon yield evil as well as good by its habitual use in the community at large.

Non-Malignant and Malignant Tumors.—Dr. J. N. Martin gives concisely the differential points between non-malignant and malignant tumors, as follows:

NON-MALIGNANT.	MALIGNANT.
1. Develop *slowly* and cease growing after a time and at certain size generally.	1. When once started, they grow *rapidly*, with no tendency to stop growing.
2. The surrounding structures are not involved; tumor generally clearly outlined.	2. Surrounding structures are involved, and there is so much infiltration that it is difficult to tell where healthy normal structures begin.
3. Generally do not ulcerate or break down, but may do so in later stages from an active cause.	3. Great tendency to ulceration, and when started there is no tendency to stop. Tissues about changed from the normal.
4. Ulceration stops when cause of irritation is removed and reparative process begins.	4. Reparative process has no effect—degeneration continues.
5. Constitution generally not affected.	5. Constitution much affected, especially in later stages when health is undermined.
6. Structure of tumor like other tissues in the body, as fibrous, nervous, and cartilaginous.	6. It is a new formation and unlike other tissues in the body which are normal.

The microscope must decide the differences in the last division.—*Dental Register.*

Antiseptic Mouth-Washes.—Dr. W. D. Miller in experimenting with different solutions, concludes that where particles of food are lodged between the teeth or such as may sometimes be found in cavities of decay, it requires as much as ten to fifteen minutes to effect a complete sterilization. Even such a powerful wash as the one under consideration will accomplish but little in sterilizing the human mouth when the centres of decay are stuffed full of food. This is also the reason why excessive smoking, notwithstanding the fact that tobacco smoke is a powerful antiseptic, does not insure the teeth against decay; the smoke passes over the surface, but does not penetrate to the point of action. It is seldom that any one in rinsing his mouth will retain the wash longer than one minute, and an antiseptic mouth-wash to be efficient, should be able to devitalize the micro-organisms with which it comes in contact within this short time. It follows that the use of this mouth-wash should always be preceded by the thorough use of the brush or tooth-pick, removing at least all the larger particles of food and opening the spaces between the teeth, so that the wash may penetrate to the vulnerable point. If this is conscientiously done, I am convinced that we have in the following solutions powerful means of preventing the excessive ravages of decay.

No. 1.

Thymol	0.25
Benzoic acid	3.00
Tinct. eucalypt	15.00
Alcohol abs	100.00
Oil wintergreen	25 drops.
Or oil peppermint	20 “

In use, enough of this mixture is added to a mouthful of water to produce a decided cloudiness. The wash no doubt may be rendered softer and more palatable by the addition of glycerine, tinct. of katechu or something of the kind.

No. 2.

Acid thymic	0.25
Acid benzoic	3.00
Hydrarg. bichloride	0.80
Tinct. eucalypt	15.00
Alcohol absolut	100.00
Ol gaultheri	gtt. xxv.

Naturally, every one is shocked at the idea of putting bichloride of mercury in a mouth-wash, but I think a more thorough consideration of the question will show that it is not so reprehensible an act as may at first appear. The strength in which the bichloride is used in the mouth is about $\frac{1}{2000}$. Let us suppose that the patient swallows of the solution two grams daily (as a matter of fact, one need not swallow any at all), it would require one hundred days to have swallowed 0.1 grams of the salt, which is the maximum dose for one day. I have made extensive use of the above formula without a trace of any physiological or toxicological action, and if a sufficient number of members of the profession would make a trial of this solution upon themselves and report the results a great deal would be done towards solving the question of the advisability of recommending the wash in practice. The taste of bichloride is disagreeable, even in very dilute solutions; it may, however, I hope be disguised by the addition proper substances. On the whole, after a great number of experiments, I have come to the conclusion that a thoroughly efficatious mouth-wash cannot be constructed with the substances now at command, without the use of bichloride of mercury.—*Independent Practitioner.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Kentucky State Society meets Tuesday, June 5, 1888, at Louisville.

Indiana State Dental Society holds its next annual meeting at Terre Haute, Tuesday, June 26, 1888.

Missouri Dental Association holds its annual meeting at Pertle Springs, Tuesday, July 10, 1888.

Minnesota Dental Association meets Wednesday, July 11, 1888, at St. Paul.

National Dental Association at Washington, D. C., July 24, 25 and 26, 1888.

INDIANA STATE DENTAL ASSOCIATION.

The thirtieth annual meeting of the Indiana State Dental Association will be held at Terre Haute, commencing Tuesday, June 26, 1888. All dentists are cordially invited to attend. The State Board of Dental Examiners will also meet at the same time and place.

R. W. Van Valzah, *Sec'y*,
Terre Haute, Ind.

INDIANA DENTAL COLLEGE.

The ninth annual commencement was held Wednesday evening, March 7, 1888. Dr. Wm. H. Atkinson, of New York, delivered the address to the class. Number of matriculates, 30; number of graduates, 17. The college reports a prosperous and satisfactory year.

J. E. Cravens, D.D.S.,
Secretary.

NEW YORK COLLEGE OF DENTISTRY.

The twenty-second annual commencement of the New York College of Dentistry was held Saturday evening, March 10, 1888. Number of matriculates, 211; number of graduates, 72.

UNIVERSITY OF MARYLAND.

The annual commencement was held March 14, 1888, at Academy of Music, Baltimore, Md. The address to the graduates was delivered by Prof. Ferdinand J. S. Gorgas, M.D., D.D.S., and the conferring of degrees and awarding of prizes by Hon. S. Teackle Wallis, LL.D., Provost of the University. Number of matriculates during the year, 109; number of graduates, 51.

CHICAGO COLLEGE OF DENTAL SURGERY.

During the college year just closed, 126 students matriculated at the Chicago College of Dental Surgery. The commencement exercises occurred Tuesday, March 27th, at 2:30 p. m., at the Grand Opera House. The degree of D.D.S. was conferred upon 44 gentlemen, by the President, Dr. J. A. Swasey. The doctorate address was delivered by Prof. Truman W. Brophy, and the class valedictory by A. H. Peck, D.D.S.

NORTHWESTERN COLLEGE OF DENTAL SURGERY.

THE commencement exercises of the Northwestern College of Dental Surgery were held April 3, 1888, at which the eight members of the class who entered the college in 1886 were graduated. The close of the scholastic year under the nine months' term will occur in June, at which time those who matriculated for the senior class of this year other than the above will receive their degrees, and the juniors their class honors. The university prize of $100 and a gold medal for excellence in all branches was awarded to L. W. Parsons. The faculty prize of a gold medal for excellence in practical work to Ernst Pfannig. Number of matriculates for the year, 38.

F. H. B. McDOWELL, *Sec'y.*

Our Aftermath.

BORN.—To Dr. and Mrs. C. I. Keely, Hamilton, Ohio, a son May 12, 1888.

THE MEDICAL DISEASES OF THE MOUTH IN CHILDREN, is the title of a series of articles by F. Forchheimer, M.D., Professor of Diseases of Children in the Medical College of Ohio, at Cincinnati, to begin in the September number of the *Archives of Pediatrics* and run through the year.

APHORISMS OF AMEDEE LATOUR.—1. Life is short, patients fastidious, and the brethren deceptive. 2. Practice is a field of which tact is the manure. 3. Patients are comparable to flannel; neither can be quilted without danger. 4. The physician who absents himself runs the same risk as the lover who leaves his mistress; he is pretty sure to find himself supplanted. 5. Would you rid yourself of a tiresome patient, present your bill. 6. The patient who pays his attendant is but exacting; he who does not is a despot. 7. The physician who depends on the gratitude of his patient for his fee is like the traveler who waited on the bank of a river until it finished flowing so that he might cross to the other side. 8. Modesty, simplicity, truthfulness! cleansing virtues, everywhere but at the bedside; there simplicity is construed *hesitation*, modesty as *want of confidence*, truth as *impoliteness*. 9. To keep within the limits of a dignified assurance without falling into the ridiculous vauntings of the boaster, constitutes the supreme talent of the physician. 10. Remember always to appear to be doing something—above all, when you are doing nothing. 11. With equal and even inferior talent, the cleanly and genteely dressed physician has a great advantage over the dirty or untidy one.—*Canada Lancet.*

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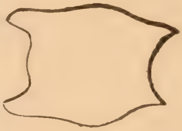
Contributions.

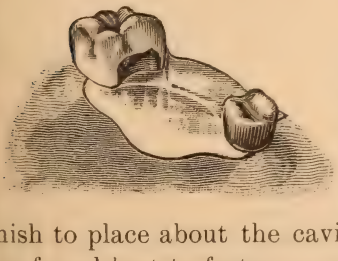
"A word fitly spoken is like apples of gold."—SOLOMON.

A TIN SHIELD.

BY DR. HENRY BARNES, CLEVELAND, O.



FOR anterior or posterior approximal cavities in the molars or bicuspids and posterior cavities in the cuspids, where the line of decay extends below the free margin of the gum where one or more teeth are missing, the tin shield will much more than save the time occupied in its manufacture.



Take taggers' tin and cut to shape so that each end will exactly fit the tooth against which it is to be placed, being careful to cut the tin a little longer than the space between the teeth. Now bend in the centre so that each end will rest upon the tooth and press into position, and with a suitable instrument burnish to place about the cavity to be filled. In some cases it will be found best to fasten one end of the shield with a piece of gutta-percha or saddlers' wax. This shield will hold back the dam thus preventing its destruction by being caught on the bur, while the cavity will remain in full sight. The tin will also serve as a reflector and need not be removed until the operation is finished.

REPORT OF CASES IN ORTHODONTIA.

BY EDWARD H. ANGLE, D.D.S., MINNEAPOLIS.

(Continued from March number.)

CASE No. 2. Referred to me by Dr. J. A. Parker, of this city, is that of a young man of German parentage, 18 years of age, of good health and development, possessing the requisite number of teeth (with exception of the superior laterals) nearly faultless in color, shape and structure. The laterals had never erupted, neither could I find any indications of their being deeply imbedded. I believe it to be one of those cases, not so common as generally supposed, where the germs were never formed. Owing to the absence of the laterals the canines had moved slightly forward. This gave that peculiar *canine* or dog-like expression to the teeth so familiar to all practitioners of dentistry, especially in the localities where physicians extract teeth, an appearance always disagreeable to me. This appearance was aggravated by the canines being badly twisted in their sockets which made their cone-like shape more noticeable. The young man was very sensitive in regard to the appearance of his teeth and desired me to attempt an improvement.

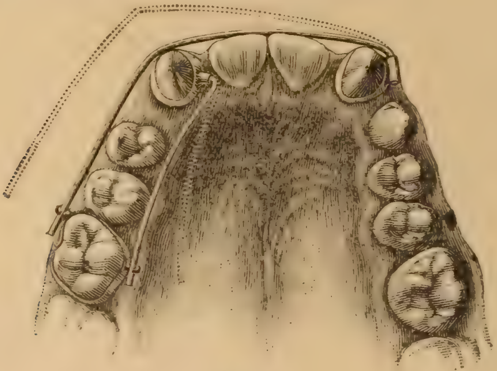


FIG. 3.

Treatment. The canines were carefully and accurately banded and pipes soldered to them. Into these pipes were inserted the ends of the spring rotating levers; the other ends of the levers were sprung around and latched into little hooks soldered to a band encircling the right first molar. The whole is so well represented in Fig. 3 that a more careful description seems needless. It will be seen that advantage is taken of making one anchor tooth serve for both levers. They acting in opposite directions, their forces antagonizing, there was not the slightest displacement of the anchor tooth, or even tenderness at any time while the levers were acting. The levers were removed once a week and straightened that an even rotating force might be maintained. They were powerful teeth and four weeks were occupied in turning one of them, the other a few days less. They were retained in their new position by removing the levers and inserting in their places in the pipes from the opposite side pieces of the gold plated wire and bending it to rest against teeth from the opposite side from which pressure was exerted. The crowns were then ground to imitate as nearly as possible large laterals.

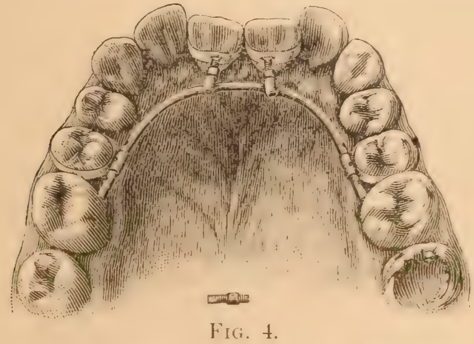


FIG. 4.

The result was gratifying to us both for his appearance was greatly improved.

In rotating teeth by this simple but powerful method care should be used that the levers should touch *only* at the anchorage and the *tooth being moved*, for if it binds against other teeth the tendency is to pry the moving teeth out of line if the force exerted be so great that the tooth is moved faster than absorption in the alveolus can take place a springing or bending of the alveolar plates will take place, and as the external plate is much thinner than the internal the tooth will follow the course offering the least resistance, and the result will be the tooth will take a position more or less outside of the line of the arch. Such outward tendency should always be an indication that too strong a lever is being used. No. 14 or 16 piano wire is usually plenty strong enough.

Case No. 3 was that of a young Scotch girl. It will be seen by referring to Fig. 4 that the teeth are all in position in the arch with the exception of the central incisors which are badly inlocked and give to the features (otherwise comely) that flattend expression so common in such cases. They were moved outward into their proper position by the appliance so well represented in the engraving, and which I feel proud of for it has been so successful in my hands in all such cases. The second bicuspids were banded and piped on a line parallel with the gum. A heavy piece of wire made of german silver or platinized gold was bent to conform to the shape of the inner arch—the ends of this wire arch were passed through the pipes on the anchor teeth and keyed in these pipes to prevent slipping. This is done by passing a small drill through the pipes on the anchor teeth indicated by middle dot in the engraving, through this is passed the key or pin made of fine piano wire fitting snugly. To this wire arch opposite the teeth to be moved outward was soldered little pipes into which were placed the small screws for pushing, shown at bottom of engraving and described in a former article—the flattened ends of the screws resting in little slots in delicate bands encircling the teeth to be moved. The force was applied by turning the little nuts with wrench every other day. After the nuts had traveled the length of the thread they were screwed back again. The keys from the anchor pipes were removed and the wire arch moved forward and keyed in position as before. Eleven days were occupied in removing the teeth out of lock, after which they were retained in their new position by the wire arch already in place and which was allowed to remain five days when it was removed and the occlusion with the inferior incisors depended upon for future retention. There is a slight spring in this wire arch which relieves the necessity of tightening the nuts as often as would be required with fixed and rigid anchorage. This wire arch may also be used as well to pull from as for pushing.

I am frequently asked if in all such cases it is not necessary to cover the molars and bicuspids with vulcanite or metallic cap while the teeth are being moved out of inlock. I believe such practice to be unnecessary, for when we consider the small proportion of time the teeth are in actual occlusion and the natural tendency to favor a tooth that is tender on pressure and the great range of occlusion, we may readily appreciate the uselessness of such methods.

IMPLANTATION, WITH CLINICAL DEMONSTRATION.

BY M. H. FLETCHER, D.D.S., M.D., CINCINNATI, O.

[Read before the Mississippi Valley Dental Association, held at Cincinnati, O., March 7, 1888.]

The operation of implantation, as recently advocated and brought into use by Dr. Younger, of California, is not more interesting from its practical value—whatever that may be—than from the physiological processes which are excited into action during the repair or healing of a successful case.

Dr. Younger claims that implanted teeth are accepted and adopted by the adjoining tissues in proportion to the amount of their surfaces covered by peridental membrane. He thinks that in the absence of this membrane the implanted tooth is always rejected and the operation in such cases is always a failure. The peridental membrane, the Doctor claims, is revivified by being surrounded again with its natural environment. He believes that the membrane will thus revive even after the lapse of years, provided there has not been such exposure as would change its organic character or cause disintegration. He alludes to the well-known fact that various forms of spores and bacteria are known to lie inactive for indefinite periods of time, and then, when brought again into the proper invironment, to revive, grow and proliferate. He claims that the reviving of the peridental membrane on implanted teeth is of a character analogous to this, and that to this essential fact is due the success of such operations.

In opposition to this view of Dr. Younger and his supporters, many others (the writer having been one of them) have claimed that there is no union of tissue, but that implanted teeth are held in position simply by that form of articulation known as "Gomphosis," just as a nail is held in place when driven into wood. When the implanted tooth is crowded into position there is sufficient contact between the walls of the prepared socket and the roots of the tooth to hold it in place temporarily. It is of course impossible to prepare a socket which will exactly fit the irregularities of the root of a tooth. But after the tooth is in place, cicatricial tissue begins to grow and fills up the spaces intervening between the root of the tooth and the surrounding wall of bone.

In this way the force of pressure, described as gomphosis, is brought to bear evenly over all parts of the root and the tooth is held firmly in position. It is undoubtedly true that normal teeth are retained in place in the same way, but whether gomphosis constitutes the entire fastening or not is a mooted question. The writer formerly believed it was, and at a meeting of the Cincinnati Odontological Society held last June, advocated the covering of the roots of implanted teeth with lead, pure gold, or some other such substance, which could not be absorbed by the circulation, believing that were this not done, absorption of the root would be the ultimate result in the majority of these operations, as it is in cases of transplanting and replanting. A dentist of California (whose name did not appear) is reported in one of our late journals as advocating this theory of covering with lead as being the best method of preserving the root from destruction. He has inserted some teeth thus covered, but with what success I have not learned.

Having had the pleasure of meeting Dr. Younger during the past summer, the writer had quite a lengthy talk with him concerning this topic. The Doctor, being of a good natured temperament, bore patiently with the persistence of your humble servant while the latter was arguing earnestly in favor of his theories against the Doctor's practical experience.

My own experience in replanting is quite limited, including but three cases all told. But in this limited experience there has been sufficient evidence that my former theories were incorrect. In one of these cases, the operation having proved a failure to a great degree, the tooth was extracted after having been in position over four months. Upon examination it was plainly to be seen that a considerable attachment had already been formed on one side by the peridental membrane. This tooth (a superior lateral) was implanted the 4th of last October, the original tooth having been lost about ten years previously from pyorrhœa alveolaris. The space between the canine and the central had closed to some degree so that it was necessary to select a very small lateral to insert between them. The only tooth available small enough for the place had been partially denuded of periosteum from calcareous deposits as well as by scraping. At that time, however, I did not deem this a matter of consequence. The tooth having been implanted it was cemented to the adjoining teeth by oxyphosphate. It progressed very nicely for about three weeks when pus began to exude from under the gums on the labial surface. This continued in varying quantities up to the time of extraction, in spite of all local treatment. It was a matter of much surprise to me, and especially under the circumstances of so free a discharge of pus, to find that a considerable zone of peridental membrane had attached itself to the bone. This attachment was so marked as to cause considerable pain in extracting.

These facts of attachment and pain on extracting are identical with those observed by Dr. Younger himself in his own personal experience, he having had an implanted tooth in his own mouth for the space of seven months, and then having had it extracted for the purpose of having the membrane examined. He experienced considerable pain in the removal, in consequence of its having been quite firmly attached.

The tooth of which you have had the history in connection with my own practice is here for your examination. The portion covered with membrane is easily distinguished from the other surface.

Now, while these two or three teeth which have been extracted and were found to have become attached to the bone do not prove conclusively Dr. Younger's theory of the reviving of the peridental membrane to be true in every case, yet these, with the numerous other cases of his and others, which have been implanted and have become attached and seem to be entirely successful, indicate very strongly that such is the normal tendency and result in all cases properly operated upon, and this form of repair of tissues is becoming an accepted fact in physiology.

It must be remembered that in this process of repair, after implantation, that time is necessary for the work to be done. As to the length of the time of repair and the continuance of the accompanying symptoms we have only to recall the clinical history of the recovery of a fractured bone in other parts of the body; this we know varies in different persons and is controlled by circumstances and conditions. It should be borne in mind also that such cases are often attended with more or less traumatic fever, and the appearance of that symptom in connection with the operation of implantation should not occasion surprise.

I have two other cases to present, both of which are doing well, one having been implanted last May and the other the fifteenth of November last. The May case is a right superior bicuspid. The original tooth having been extracted only three months, there was a small depression where the socket had been and the absorption of the alveolus had not been very great. But the new socket had to be drilled into the bone much the same as though the tooth had been out for years. The new tooth was kept cemented in position most of the time for about four weeks and has become perfectly firm, as you may see by examination.

The November case is also a superior bicuspid on the right side. This was left without ligature, cement, or any kind of fastening, in order to determine, if possible, whether fastening was necessary. It has not done so well as the preceding case, but still is doing well enough to remain and to be useful. At the time of this operation I took from the place where this tooth now is, about the eighth of an inch of the apex of the old bicuspid which was fastened only to the gums.

It might be said by some that these cases were simply transplanting, but they are far from it, for in each one a new socket was made for the reception of the implanted tooth.

In reviewing the history of the few operations of this kind, we conclude as to the point of practicability, that we may certainly class implantation as among the legitimate operations coming under the head of Dental Surgery.

Many persons have mistakenly supposed that the operation of implanting is very similar to transplanting and replanting. The fact is that it differs from both these operations in almost every particular. To discuss this matter fully would require a special paper. But a point or two in this connection may be suggested here. About the only similarity in the three operations is the fact that a natural tooth, the root of which is still covered with peridental membrane, is used in each. In transplanting and replanting, a tooth is fitted into the natural socket of the original tooth. But in implanting, a new socket is cut into the maxillary bone by drilling into its substance. This operation opens the haversian canals in the dense portion of the bone and also penetrates into the medullary spaces in the cancellous portions. Since it is not practicable to prepare a socket that will fit exactly the depressions and irregularities on the root of the tooth to be inserted there must necessarily be more or less space left between the root and the surrounding tissues, after the tooth is placed in position. This space, or we might say, these spaces, are at once filled with blood from the freshly opened blood-vessels in the bone. The usual granulations begin to form and as they approach the surface of the tooth they come into contact with an old friend as it were in the peridental membrane with which it is covered. This membrane, under what is so nearly its original natural environment of blood supply, etc., is supposed now to revive and enter upon new and continued life. The process of granulation proceeds until all the vacant space in the new socket is filled up. The old membrane on the tooth furnishes the cells which are supposed to proliferate, and what may be termed a new peridental membrane is thus formed. If this theory of the method of the acceptance and retention of the new tooth is correct, it is obvious that the operation of implanting is much more likely to be successful than either that of transplanting or replanting. In both the latter operations the walls of the original socket are left intact. These are penetrated by but few blood-vessels, and these are confined principally to one portion of the socket, viz.: the apex. There is, therefore, but slight opportunity for granulation. The blood which flows into the vacant spaces in the socket deteriorates. The peridental membrane and fragments of tissue on the transplanted or replanted tooth under these conditions must degenerate. The consequence is that pus is formed, and the operation is most likely to be a failure. But the conditions are different when the walls of the old socket are cut away. Numerous blood-vessels are thus opened in every part of the socket, and the process of granulation begins about every part of the root of the new tooth. Nature in thus repairing damages builds a new socket for the tooth and the operation becomes successful.

But a further discussion of this part of the subject must be postponed until some other time when the results of experiments and investigations now in progress or under contemplation can be shown and properly discussed.

For the present I must content myself by saying that if experience shall finally show that the operation of implantation is successful while transplanting and replanting fail, it will probably be for the reasons indicated above.

Note.—Dr. Fletcher then exhibited and explained to the members of the Association the cases upon which he had already operated and closed his clinical demonstration by performing the operation of implanting for a patient he had in waiting.

ALVEOLAR ABSCESS.

BY H. H. HARRISON, D.D.S., CADIZ, O.

[Read before the Ohio Valley Dental Society, held at Wheeling, W. Va., April, 1888.]

Abscess is the termination or result of inflammation, and is produced by the presence of a foreign substance within the living tissues. This element may be the product, by decomposition, of a devitalized part of the body, or it may be a strictly foreign substance which has been accidentally taken into the tissues. Whatever it may be nature antagonizes and tries to eliminate it by calling the proper forces to work against the intruder.

The inflammation that precedes alveolar abscess causes degeneration of the peridental membrane which is changed into a sack, or receptacle, for the pus which is being formed, which passes into the sack by endosmosis increasing and enlarging it until its pressure causes absorption of the surrounding bony walls, when a fissure is soon formed in the direction of the least resistance, and following this course the pus is soon expelled from the body. As this fissure is being formed, nature protects the adjacent tissues from injury by lining this track with a membranous structure; and so this foreign and poisonous element is disposed of, together with all its unhealthful production; and just so long as this pathological condition continues will this avenue of escape remain open.

Alveolar abscess is not difficult of diagnosis, for where you find the other physical indications you will almost invariably find a tooth with a dead pulp. Of course it may occur from other causes, but certainly very seldom. With an experience of twenty-five years I have seen but one case produced from other causes.

When alveolar abscess is first formed it is called acute, and if permitted to run its course it then lapses into a latent state when it is called chronic. Some use the term residual instead of chronic, but this is certainly without good authority.

In very many diseases when the acute attack has subsided the cause also has been removed. Not so with alveolar abscess as a rule. After the first attack it passes into a state of quietude, but may on slight provocation at any time be awakened into fury, like the volcano that has remained dormant for a long period belches forth its fire and smoke from the same cause that first brought it into existence.

Why alveolar abscess is caused by the death of the pulp of a tooth is very readily understood when carefully considered. We know when that peculiar and unexplainable principle called life leaves the animal or vegetable, the body decomposes and the molecules and atoms that constitute its identity are resolved into their original state, poisonous gases are generated which are forced out through the apical foramen, and coming in contact with the soft tissue poison it producing inflammation and finally abscess as the result.

The only treatment for abscess in its acute stage is to make an opening for the exit of the pus. This may be done in any one of three ways: By opening into the pulp cavity and penetrating the sack through foramen of the root, by puncturing through the alveolus, or by extracting the tooth. The use of counter-irritants is of no avail after an abscess is formed.

Acute diseases as a rule yield more readily to treatment than chronic and require less time, but this is not the case with alveolar abscess. No matter how long the abscess has existed if the peridental membrane is not destroyed, it can be cured by a single operation, if well directed. Remove the cause and the effect will cease. Dead pulp is the cause and abscess is the effect. We do not mean by this that every case can be cured at one sitting, for some cases defy thorough cleansing on account of difficult access. But this one rule can be laid down: That thorough cleansing and thorough filling will put an end to the abscess, and this is true in case of an abscess with or without an external opening. Some have said that such treatment is likely to produce septicemia, or blood poison, if pus be left in the sac. If this were true we should have had multitudes of patients die from this cause, for the acute stage of abscess always has these conditions. Nature has made wise provision for such emergencies and the pus is removed by absorption, but does not go into the general circulation.

The only cause to be assigned for septicemia is that the great pressure produced by an increasing abscess ruptures the parts and the pus is infiltrated into the vascular tissue and carried into the general circulation. This is certainly very rare in alveolar abscess, for as before stated, as the fissure advances toward the surfaces it is provided with a lining, tube-like in its character, that prevents the pus being extravasated. There doubtless have been some cases of blood poison from this disease, but most certainly in cases where other complications existed.

In the further treatment of alveolar abscess in its acute form, care must be observed that it does not make its exit upon the face, for this makes a very unsightly cicatrix which generally comes to stay. When such indications arise, an opening should be made within the mouth, care being taken not to wound the facial artery. The exit of the pus may be at a considerable distance from the tooth which produces it. This is calculated to perplex and deceive the inexperienced and often causes the loss of sound teeth. One case comes to my mind where the external opening was located between the infraorbital foramen and the orbit, and was treated for a year by a physician who formerly decided it to be a cancer. This disease was cured in one operation by cleansing the pulp cavity and filling at the first sitting—no blood poison although considerable pus remained in the sac at the time the case was operated upon.

The more we study physiological and pathological conditions the more light we get, but we never get so much that obscurities do not present themselves, which very naturally calls up the language of the Bible, "Man is fearfully and wonderfully made," and rationally brings us to the conclusion that, "The proper study of mankind is man."

THE EXTRACTION OF DECIDUOUS TEETH.

BY DR. J. G. PARR.

[Read before the Ohio Valley Dental Society.]

It is with considerable embarrassment that I attempt to occupy the attention of this society, partly because I am one of the junior members of the profession, and partly because this is my first effort at writing a paper on a scientific subject.

The subject of my paper is one that is worthy of very careful consideration and study and should engage the attention of every practitioner of dentistry.

While I am not able to develop it very thoroughly, yet I hope to bring it before you with a few remarks to open the discussion and thereby get the opinion of the society.

The eruption of the deciduous teeth usually begins about the seventh month and is not completed until about the twenty-eighth or thirtieth.

In the economy of man there is provision made for the extraction of the deciduous teeth by natural laws.

When Nature fails to perform her duties promptly, and plainly needs assistance, then, and then only, should she be assisted by instrumental interference. I deem it not less essential that the operator knows just when to extract than that he knows just how to extract. Because a tooth is decayed or aching is not always sufficient reason for extracting,—oftentimes by proper treatment and filling a deciduous tooth can be preserved until the permanent tooth is nearly ready to erupt, and by so doing you not only favor your patient with a full set of teeth, but prevent deformity of the maxilla and allow a regular and even eruption of the permanent teeth. A great many deciduous teeth are extracted by our medical brethren who do not make the teeth a study, but whose main object is to get the money for the extracting without regard to the tooth or the propriety of extracting it, the only requisite being the consent of the patient.

A deciduous tooth should be extracted when allowing it to remain would crowd the permanent tooth out of its proper place which is often the case,—the permanent tooth growing either on the inner or outer side of the deciduous. When such is the case the deciduous should be extracted at once so as to allow the permanent tooth to go down to its proper place.

When a deciduous tooth is found growing in an abnormal position,—as in the roof of the mouth,—it should be extracted, or when one becomes very loose and is aching or causing the patient much inconvenience it should be removed.

When the space left by the extraction of a deciduous tooth is not sufficient to allow the eruption of the permanent tooth without twisting or growing edgeways, one of the adjoining deciduous teeth should be extracted so as to allow plenty of room for the permanent tooth,—in short,—whenever the deciduous tooth in any way interferes with the regular and even development of the permanent, the former should be sacrificed for the latter.

We need to guard against free extraction of the deciduous teeth for trivial causes, or causes that can be removed by other means.

It is now generally conceded by the dental profession that there may be contraction of the jaw by shriveling of the cicatricial tissue if the teeth are extracted any considerable time before the eruption of the permanent teeth. We are often called upon to extract a deciduous tooth which is decayed and aching, —unless it is nearly time for the appearance of the permanent tooth, we advise the patient to have the tooth treated and filled just the same as though it was a permanent tooth.

The manner in which to extract the deciduous teeth when it becomes necessary, or when the patient demands it, should receive some attention. Usually they are not so difficult to extract as the permanent and the forceps should not be pushed down upon the root so far for fear of injuring the tooth which is undergoing the process of development and which is to take the place of the one extracted.

The same general rules apply to the extraction of the first set of teeth as for the second, but more care is required to avoid injuring the alveolus.

"OLD DOGS AT NEW TRICKS."

BY DR. C. M. WRIGHT, CINCINNATI, O.

[Introductory Lecture to the Spring Course in the Ohio Dental College, March 22, 1888.]

GENTLEMEN:—This is the opening lecture from the chair of Physiology and Pathology in a so-called spring course. It is a new thing in the old institution. As far as I know, a spring course of lectures has never been given in the Ohio Dental College. Now, while the Ohio Dental College to day is believed to be the second in regard to age of all the colleges in the world—not second, by any means, in regard to quality, but only in respect to the question of birth—it may seem to be out of place for her to try experiments or to adopt the methods of younger and more immature institutions of this character in this country. The old proverb that we all have heard and which applies so aptly to many of the conditions of life which we daily see about us, viz.:

"You can't teach an old dog new tricks," would seem to be in the way of our success in this line at this time, for we are an old—institution, and this is a new—trick. But I want to stop for a moment to try to show you that although we acknowledge the fact of our age, and are proud of the fact that we are old, and the fact of the new enterprise of a spring course, still, we deny the truth of the proverb or that the proverb applies to us, or in fact that it always applies to old dogs. There are so many exceptions, so many exceptionably small old dogs that, even in the profession which we have adopted, old dogs do learn new tricks every day. I think if we could run over all the names now distinguished in our specialty, if we should hunt out the men who are deeply interested in new inventions, in new methods, in new things, or who are constantly learning new tricks, we should find that a host of them are the same men who were just as eager for the new methods, the new inventions, the modern improvements, twenty, or even thirty years ago. I have been struck by this fact many times when engaged in some special search which required a review of the old journals, the journals of a quarter of a century ago. In looking over a journal the other day, of the year 1855, I came across some articles from Dr. D. of New York City. Advocating a new method of contouring teeth by a new gold, a new kind of sponge or crystal gold. It was a new thing then—a new trick—and Dr. D. was 33 years younger then than he is now. The articles were good enough to be a part of any of our best journals of to-day. The same day that I came across the articles in the old journal, of 1855, I took up a Philadelphia journal of 1888, and behold here was an article by Dr. D. describing and criticising a new and late method of employing gold. And I compared the articles of the same writer, one 33 years older than the other; one written when the mind, and the heart, and the muscles, and the hand were 33 years younger than they are to-day, and I could not detect the failure, the fossilization, the stiffening of even the heart, the head, or the hand of the writer. This is only one case, and there are many, for as I have just remarked, I have myself *often* been struck with the fact in my reading. It is not a solitary case. It is not a remarkable case, excepting for the fact that such instances are remarkable in themselves; and remarkable, that it is not a *rare* case. And if it is not rare in our profession to find old men, men of experience, men of long years of work still enthusiastic in the prosecution of that work, still eager in the pursuit of improvements in methods of that work, still capable of laying aside old and taking up new habits, or of learning new tricks, (to be consistent with our text,) why, then, we may not be surprised when we find an old college adopting new and late methods; we need not be surprised to have the old walls of this lecture room, that have for so many years echoed only to the sound of eloquent (?) teachers during *winter sessions*, and have remained so dormant, so tomb-like in silence, so given up to the spiders and the mice, who get terribly thin and weak during the long vacation, not having even the crumbs which fall from the student's pockets to encourage them in a continued residence in these halls. I repeat, we need not be surprised to hear these walls resounding again with words of wisdom before the spiders and the mice have had a chance to recover from the shock of the last day of the old winter session, and to find a spring course in full blast twelve days after the final exercises of the last class, with just as much energy and vim displayed on the part of the faculty to do their duty in the way of imparting instruction, and just as much energy and vim on the part of the students and do their duty in the way of receiving instruction.

Now you may think that this lecture is very far away from the subject of Physiology. The question of the learning of new tricks by old dogs does not at first seem to have any connection with the subject which should be taught from the chair, either in a spring course or a winter course. Well, perhaps it hasn't. But physiology as studied and taught to-day is a very broad one. I should be sorry to see any one try to bring it down to a straight line. It doesn't run in one direction. It is not even like a circle, or a right angled triangle, or any geometrical figure that I can think of. It might be compared to the ripples and circles formed in a pond of water into which a whole handfull of loose gravel has been cast, each ripple, and circle, and wave, and reflection, and counter current representing a science, or one of the sciences, intimately connected with or forming a part of the great science of physiology. Think over a few of these sciences so intimately connected with the great one of physiology. Let us enumerate rapidly: Biology, Anatomy, Physics, Chemistry, Morality, Religion. Everything, everything that you can think of as connected in any way with the life of an animal or plant; with any life, with any living thing on this planet or any other planet; every scrap of news relative to an inhabitant of this age or of any preceding age, might be easily considered by the physiologist, and from the standpoint of his observation, a subject of importance for a lecture or a book. We can't read about the habits, the social or political habits of the early Greeks or the early Romans who flourished two or three shousand years ago, and who made at that time such an important, and enviable, and conspicuous a niche for themselves in history, and whose story is so interesting to us of this latter day, without bringing into our minds questions of physiology. We try by our present knowledge of physiology to account for their culture, their beauty, their institutions. We study their circumstances, the effects of their necessary tendencies to adapt themselves to these circumstances, the power of adaptation, the influence of heredity, the consequences of this or that physiological condition, on their oratory, their art, their habits, etc. We can't think of Socrates, or Confucius, or Pilate, or Jesus, without calling up questions of physiology in our minds. Is there not an intimate relation between the food taken into the body and the action of the tissues? Of the nervous tissue as well as the connective tissue? Of the brain as well as well as the liver? Does not the wind whistling from the north in November, or the sun smiling upon us in the early spring affect our tissues, all our tissues, and are not our thoughts the product of activity on the part of a tissue of our bodies? Have not the qualities of the mind which we so often refer to as perception, memory, judgment, etc., at least a very intimate dependence upon that part of the nervous organization of our bodies which we call the brain? And is not this brain made up of certain nervous tissues, and are not these tissues made up of cells? And are not these cells made up of living matter and the results of the activity of this living matter? And is not this living matter dependent upon elements derived from the earth beneath us and the air about us? Food? Then how can we say that the difference between the thoughts of Confucius and the thoughts of Euripides, is not occasioned in part, if not largely, by the difference in food? How can we say that the different civilizations of the Chinese and of the early Greeks, are not the respective results of their different foods or diets? Physiology looks into the heart and can, perhaps, tell why John became a counterfeiter and Tom a preacher of the gospel. The infinite number of ramifying and radiating influences which centrifugally are brought to bear upon the soft and impressible seed of the future man, affecting his growth, his life, his morals, and his everlasting salvation, cannot be traced; but to try to trace them and to study the effects as resulting from the causes, is within the province of physiology.

We cannot expect to begin to trace even one little thread of this great reticulum of activities which bear upon life in our elements, if in physiology, as taught in a spring or winter course in a dental college, we have to confine ourselves to one narrow course of a consideration of some of the most simple and elementary subjects connected with the great study. We have to consider the question of the structure of some simple tissues, and its ability to take in food and give off waste matter and act its little part in the economy of Nature. We have to become familiar with the elements, just as a student of practical dentistry must learn first what the excavators, the chisels, the engines, the lathes, the plaster-of-Paris, the gold, the vulcanite, etc. are, and how to work them. They are the tools with which to work out the possibilities which lie before him in his chosen profession; and he must have a knowledge of these tools before it would be possible for him to accomplish anything in his art. So it is in physiology. The student must become familiar with the tools and what they are constructed for before he can begin the building up of a knowledge of the true science of physiology. And histology, which is the science of the minute structure of tissues and a knowledge of which science is possible only by use of the microscope, is one tool. And anatomy, which is the science of the structure of organs and of the body, a knowledge of which can be acquired only by the use of the scapel, is another tool. And chemistry, which is the science of the elements of earth, air and water, which go to make up, by various combinations, everything about us, organic or inorganic, and a knowledge of which can be acquired only by the use of the retort, the electric machines, the parapharnalia of the laboratory, etc., is like another tool. I need not mention physics and the other tools useful in physiology. I need not hint even at the vastness of the possibilities of the tools themselves, the cultivation of which has embraced the life history of so many great minds in the past and at the present time, occupying centuries of thought in successive ages of students.

It is well for us that we don't expect to get beyond the threshold of any of these sciencies in an ordinary college course, for if we did expect more, we should be sadly disappointed. It will be well for us if we get to the threshold—if we get upon the door-steps even so as to obtain only a glimpse, one little glimpse, but one clear glimpse of what lies within the temple. Hundreds of medical and dental students pass their final examinations before a college faculty, receive their sheepskin certificates without ever having had one single peep into the temple of knowledge. They spend their days on the lowest step of the stairway leading to the door and mingle with the crowd there, and never have one broad, comprehensive idea of even the door itself. They don't know what there is to be learned. They don't know that there is anything beyond the first step, and they hurry on through life with a self-satisfying feeling of superiority to other mortals, simply because they have never comprehended that there is anything more in knowledge than just the preliminary rudiments of which they have a sort of smattering. If I could, as I have said before, in past lectures to other classes, accomplish this one thing of leading one-tenth part of the students of the old college up to the door, and of giving them the opportunity of seeing for one moment what lies within, of giving them just one glance, one comprehensive glance of all that physiology means, I shall be satisfied that my work has not been in vain.

I am not claiming too much for physiology. I could not claim too much for it. In fact, to-day, in all that I have said in its favor, I am not, perhaps, claiming more for it than did a former teacher in the college claim for chemistry. Years ago Prof. Geo. Watt stated in this room that he doubted if the devil could tempt a human being to sin without the aid of chemistry. I do not quote Dr. Watt's words exactly, but the idea must be clear to every chemist and physiologist. And I accept the broad view of Dr. Watt, and all that it implies, as far as I can see.

FIRST PERMANENT MOLARS.

BY C. S. CASE, M.D., D.D.S., JACKSON, MICH.

The following scheme was presented to obtain statistics relative to the First Permanent Molars.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

If there is one question more than another upon which there is a wide difference of opinion among leading dentists, it is relative to the treatment of the first permanent molars between the ages of 7 and 13 that are difficult to save.

Some advocate the filling of them in advanced stages of decay, and under very unfavorable influences, for reasons which have been so often discussed it were useless to enumerate them here. On the other hand there is an equal array of ability who advise their extraction, under like conditions, in time to allow the second molars to take their places without irregularity if possible, and especially in a crowded jaw and under influences that render the ultimate saving of them improbable.

A year ago we listened to a short talk upon this subject by Prof. Watling—in lieu of a paper and models which he unfortunately left at home, and which I hoped would be presented at this meeting. He did not advocate the wholesale extraction of the first permanent molars, or the wholesale filling of them, even when possible, but chose rather to be guided by the conditions of each individual case and that which would promise the greatest future good to the whole mouth.

The short discussion which followed was but a repetition of that which takes place in every convention when this question is presented—the leading men in the profession often advocating radical and diametrically opposing.

It is not my purpose to use the valuable time of this meeting in a further discussion of the subject, but wholly with the view of respectfully submitting a method for consideration which is intended to enlist the general coöperation of the profession in the procurement of data, that it is hoped will in time put the subject upon a more scientific basis, for since men's opinions so widely differ, if we can ever arrive at a more universally accepted system of practice it must be established by the certain knowledge of conditions in a large number of cases, under different methods of treatment.

Soon after the convention I made a rough draft of a letter to be addressed to each member of the Society, asking them to bring models to this meeting. I also made an historical blank, to be filled out and appended to the models. I had them put into print with directions to leave the forms standing for future changes, and there it has rested till now.

I bring this matter before you with the hope that it will receive the sanction and authority of the Society, and that a committee be appointed to correct the blanks and make such other arrangements as will be necessary for the fulfillment of the scheme; an explanation of which will be found in the letter as follows:

"Dear Doctor:—The question, 'What shall be done with the first permanent molars at the ages of from seven to ten years whose condtions are such as to foreshadow early loss?' is one of so much importance, and about which authorities so widely differ, we have decided to solicit your aid in an endeavor to collect data that will place the subject upon a more scientific basis.

You are asked to make plaster models, upper and lower (and if possible the facial expression), of every questionable case that comes under your hands. In those cases where you have decided to save the said molars you will please mark upon the model the size and shape of the fillings; but if you have thought best to extract them please replant them in the models in their proper position, or preserve them in dilute alcohol.

To these preparations you will append the enclosed blank, filled out, and bring or send to our next annual meeting, where they will be properly systematized and labelled for future comparison.

During each subsequent year you will endeavor to make models of the same cases, and also add to your list new ones.

It is believed that when sufficient time has elapsed so that comparisons can be made ranging over a number of years, our collection will prove of great value in establishing some system of treatment that will be more universally accepted as the correct one. Respectfully,

————————."

The following is the blank to accompany the first model, and to be filled out with each subsequent model:

Name————————.
Address————————.
Age and Date when First Permanent Molars were filled or extracted —— ——
Date of Model No. 1———————— ——Age.
" " " No. 2———————— —— "
" " " No. 3———————— —— "
" " " No. 4———————— —— "
" " " No. 5———————— —— "

REMARKS.

DISCUSSION.

Dr. J. Taft: There has been no systematic effort to determine the history and character of the first permanent molars. There are differences of opinion on the subject. Some say all should be extracted. Others say that this should be done only in special cases. It is very desirable that we should know all that can be learned in regard to preserving them. A series of experiments extending over several years and carried on by persons interested would be very valuable and would settle many questions. I believe Dr. Case's idea to be a very good one. The blank he has prepared contains the questions most necessary. It is not much but exact data that we wish, and that is what the blank purposes to get. This blank should be filled out and sent to some person who would have it in charge. The experiments should be followed up very soon after, and then each year for several years. Thus we might learn what changes in position the teeth undergo after the first molars. Sometimes one, and again all change. The general rule is a matter of question. Is it desirable to leave a large space between the teeth? Sometimes the molars will lean toward each other, the teeth will strike each other at an angle so that there can be no good grinding nor thorough salivation. In what proportion do they come up square? That is another question which might be settled in this manner. What part does the third molar play? Does it always become a good masticating organ? What is the liability in these cases? It is necessary to know this. These and many other questions could be scientifically settled by a series of experiments carried on through a number of years. But who is to do it? The profession is too busy making dollars to follow up such cases. They will not take the time it needs. The best and most expeditious way is to call for volunteers. If a dozen, half a dozen, or even three men follow it up, it would be of great service to the profession.

Dr. C. S. Case: The paper was not written to provoke discussion on the subject itself, but in order to get you to bring to our meetings models of various kinds, and, further, to set in motion a line of investigations. Will you do it? Or must we go on for years in the same old rut without any new ideas on the subject, without endeavoring to learn more concerning this important matter? Can we not appoint a committee to take charge of it?

Dr. R. Douglass: I would be in favor of such a committee and would suggest that the members of the proposed committee be young men. They will have a better chance of getting a longer series of experiments. They can take it up where we older men leave off.

Dr. J. Taft: The most advisable way would no doubt be to call for volunteers. It would scarcely be worth while for any one to take hold of the matter who does not expect to remain in one locality for some time. Let these consult with Dr. Case.

Dr. C. S. Case: Take the impression of the mouth and even of the face, when practicable, of patients coming under your care.

[*Michigan State Dental Society Transactions to be Continued.*]

ILLINOIS STATE DENTAL SOCIETY.

[Reported for the Ohio Journal of Dental Science by "Mrs. M. W. J."]

The twenty-fourth annual meeting of the Illinois State Dental Society was held at Cairo, May 8 to 11, 1888.

After prayer and roll-call, (with fifty-four members present,) brief but eloquent Address of Welcome, on the part of the Mayor and citizens of Cairo, was responded to in humorous style by Dr. C. R. E. Koch.

The reports of the Secretary and Treasurer, which were then read, gave evidence of the prosperous condition of the Society, both numerically and financially, the former showing an active membership of 142; the latter the receipt of over $700 during the year.

The report of the Librarian was less satisfactory, no volumes having been contributed during the year.

The officers for the ensuing year are: President, C. B. Rohland, Alton; Vice-President, Charles Henry, Jacksonville; Secretary, Garrett Newkirk, Chicago; Treasurer, T. W. Prichett, Whitehall; Librarian, W. B. Ames, Chicago.

The President in his annual address dwelt strongly upon the importance of educating the public as to the value of the dental organs; with intelligent public sentiment, knavery and quackery would die of inanition. As individuals, dentists should teach their patients, who have no where else to look for light, and as societies, one evening should be devoted to public exercises; lectures should be given in the public schools, and articles on the subject, adapted to the general reader, should have circulation in the daily journals. Instruction on the subject should be given in the kindergartens and primary schools; brief items of information on the value and care of the teeth should be inserted in the spellers, and articles of greater length in the readers; text-books should also be prepared and introduced in the different grades of schools on dental hygiene, anatomy, and physiology. He spoke of the action taken in this matter by the American Association, a committee having been appointed at the last meeting to report at Louisville before the joint meeting of the American and Southern Associations, in August next. Among the important events which have transpired during the past year, he mentioned the formal recognition of the profession by the American Medical Society, and of the proper attitude to be preserved by the dental profession; of the International Medical Congress and the work accomplished by the Dental Section. He also spoke of the legitimate claim of the dental profession to exemption from jury duty. He spoke of the coming twenty-fifth annual meeting of the Society, and the propriety of celebrating in appropriate manner so auspicious an occasion.

At the close of the President's address, the meeting adjourned to 2:30 P. M.

After the reading of the minutes of the morning session, Dr. A. W. Harlan called for the consideration of an amendment to the Constitution offered at the last annual meeting.

Section 1 of Article V of the By-laws (adopted in 1873) provides that "*an active member shall not accept a student for a less* *period than three years, and shall require each student to give a written obligation to graduate at some regularly organized Dental College, before he assumes the responsibilities of a dental practitioner.*" The proposed amendment was to strike out the term "three years." This gave rise to a lengthy discussion between Drs. Harlan, Taylor, Crouse, Moody, Black, Cushing, Wassall, Jennelle, Brophy, and others. It seemed to be a mooted point whether the term of *three years* named, included or excluded the two years required as the college term. Very few students will be found willing to pass three years in a dental office and two years in the college, when they can "get through" in the two years at college. It therefore practically shuts students out of offices.

Dr. Black thought, that whereas the rule is now peremptory, it should be made advisory.

Dr. Wassall said that the sentiment of the profession made the rules of the colleges. If it was the general opinion that three years were essential, it should be explicitly so stated.

Dr. Brophy thought the time at college should be lengthened to three years, with more frequent lectures. The terms "competition between preceptors and colleges" had been used, but Dr. Brophy objected to this expression, as all were working for the same end,—the more thorough education of the student.

The motion was lost on being put to a vote.

Dr. Wassall offered, as a standing resolution, that the section of the By-laws under discussion be construed to include the college term. Adopted.

Dr. Harlan also offered a resolution, which was adopted, expressing the sense of the Society that two terms was not sufficient for the dental education of students, and requesting the Board of Dental Faculties to require three full years at college.

The report of the Committee on Dental Science and Literature was next read. The questions were asked, Is our practice scientific in its methods? Is it satisfactory in its results? Are we making progress? Answer, Yes; we are slowly eliminating antique methods; we are growing free from empiricism; we are permanently saving hundreds of teeth which a few years ago would have been doomed to the forceps. In crowning roots the great want is suitable instruments for shaping the root so that the band will conform perfectly. The report took exceptions to recent teachings as to *immediate root fillings;* and also the attempts to merely *keep pulps alive*, regardless of whether they perform their functions properly, or are entirely comfortable. When the alternation lies between devitalization and thorough work at once, or a lingering death through months of discomfort, the former should be the choice. The combination of gold and tin was highly commended for its perfect control of cervical margins, for its antiseptic qualities, as almost the *ideal* filling material.

The investigations of Dr. G. V. Black on the peridental membrane, and of Dr. Storer on the microscopic structure of tooth substance, were highly commended. The question was raised as to the practical benefits derived from the study of the germ theory, and the conclusions reached that all is not proved that has been claimed, though further knowledge may prove of great value. Concerning our periodic literature, great complaint was made of the lack of originality, the same articles appearing repeatedly in the different journals. Dentists were urged to contribute more liberally to the pages of journals; to cultivate the habit of making notes and memoranda from which articles could be readily compiled with but little trouble.

The report being open to discussion—

Dr. Brophy expressed his disappointment that the report had not told how to secure better adaptation of crowns to roots. He thought the band should be so annealed and softened as to admit of being burnished into all depressions. He condemned the recent modes of immediate filling, as incurring too great risks, preferring the application of 95% carbolic acid and the delay of a day or two.

Dr. Harlan thought the report was conspicuous for what it had omitted, especially in literature, having made no mention of the recent publications of Drs. Talbot and Haskell and many others. It was the duty of the committee to point out what had been accomplished; not to discuss methods, but to report them.

Dr. Noyes thought the recent investigations of the germ theories had benefited practice very much; though we may use the same remedies as before we now use them scientifically and understandingly, instead of empirically and accidentally. We feel much better satisfied when we know *why* we use a remedy, and just what conditions it will meet. We can work with certainty and promptness.

Dr. Cushing said that though it was evident the committee had not read the paragraph of the Constitution which defined their duties, yet the report contained much that was valuable.

Dr. Freeman had expected a *resumé* of the new works published during the year, as it was not possible for each man to buy them all. He thought money should be appropriated by the society to enable the committee to purchase everything new and review it thoroughly.

Dr. J. J. R. Patrick said it was the duty of the committee to examine all publications and point out palpable errors, letting the publishers know that the profession was not to be fed on chaff. He said that he took nearly every periodical published, but could get all that was good in them all in less than an hour. It was nearly all rehash. But it is not the journals that are to be blamed that better matter is not sent to them. We need one good journal to criticize all the others. When a good place is left bare to spank, spank it well, and there will not be so many bare places!

After some further discussion the subject was passed, and the report of the Committee on Dental Art and Inventions read.

Dr. Marriner said it had been uphill work, as it was very difficult to get particulars from the inventors. Among the inventions specially commended were the Knapp blow-pipe, Dunn's medical syringes, Wooley's root and canal dryer, the combined gold silver lined rubber plates, Bradley's adjustable matrix, W. N. Morrison's regulating appliance, Newkirk's method of mounting wood polishing points, Pyle's Pearline for cleansing spittons, etc., W. G. A. Bonwill's method of packing amalgam with bibulous paper, and a number of small appliances to be exhibited at the clinics.

At the clinics, Wednesday,

Dr. C. A. Kitchen, Rockford, filled a very large crown and anterior approximal cavity in a lower molar, filling partially with tin and finishing with gold. Dr. Kitchen used in this operation the new "A" electric motor of the Belding Motor Co., Chicago.

Dr. J. W. Cormany, Mt. Carroll, made a large contour operation in a superior right central incisor, using the electric mallet.

Dr. T. L. Gilmer, Quincy, prepared a root and applied a "telescopic platinum and gold crown," first fitting perfectly a very narrow platinum band, over which is passed the broader gold band.

Dr. K. B. Davis, Springfield, filled a large anterior approximal cavity in a superior second bicuspid, laying a foundation of tin, finishing with gold.

Dr. D. B. Freeman, Chicago, filled a mesial and a distal approximal cavity in the first and second inferior molars, using a double-faced matrix of soft tin.

Dr. J. Austin Dunn, with his improved medicinal syringe, was treating a very badly decayed root with a fistulous opening of nine years standing.

Dr. W. H. Taggart, Freeport, exhibited an instrument, with a set of moulds, for making corundum disks and points from scraps of broken wheels and disks, a very economical device.

Dr. J. J. R. Patrick, Belleville, exhibited his regulating appliances, illustrated by a large model with movable teeth.

Dr. W. N. Morrison, St. Louis, exhibited his regulating appliances, consisting of jack-screws secured by thin platinum bands, springs, wedges, etc.

Dr. Call, Peoria, exhibited his gold crowns.

Dr. Fuller, St. Louis, had on view a very conveniently and systematically arranged case for dental engine appliances.

Dr. Freeman's loop-clamps; Dr. Reed's universal matrix appliance, and various other small appliances were exhibited and used in the clinics.

Dr. Parson's warm air injector attracted much attention. Connection is made through the tripod of the dental engine with a small battery and heater, or electro-thermo-stat, working at the same time the bur of the engine, or saliva ejector, and furnishing a current of heated air ranging from 90° to 145° as wanted. It may also be used to force medicines through an abscess, as an atomizer, a pneumatic plugger, or a blow-pipe.

The new electric motor of the Belding Motor Co., Chicago, gave great satisfaction as experimentally and in the clinics. It produces a very even current, is attached directly to any engine, is light, noiseless, simple and cheap, the price for everything complete being only $45.

The Detroit Motor Co.'s motor, which has stood the test of time, is now offered of various powers up to one-fourth horsepower, and ranging in weight from 4 pounds to 15 or more. It is also wound for the Brush, Edison, and other circuits. They now offer a very desirable and ornamental *fan* attachment for the dental engine, forming an admirable method of ventilation.

(To be continued.)

Compilations.

"Gather up the Fragments."

THE MANAGEMENT OF PULPLESS TEETH, FROM THE STANDPOINT OF DAILY PRACTICE.

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILL.

It is with no small degree of trepidation that I venture to present to you a few observation on the management of pulpless teeth, in face of the fact of recent contributions to our Society's proceedings and the current periodical literature of the time. However, I hope that the subject itself has enough of interest in it to receive and merit your most thoughtful consideration. In the effort to conserve teeth in the mouth for mastication and articulate speech, the retention of roots for the support of pivot teeth and crowns, and the growing tendency to resort to bridges of the fixed and removable kind, dental surgeons everywhere are devoting much of their thought, ingenuity, and energy in the direction of retaining within the mouth many pulpless teeth, we had presented to us various operative procedures designated by their authors as mechanical methods; others have been urged for adoption as the immediate dressing and filling method, and still others comprising what is known as the lime-dressing or therapeutic expectant method. From the variety of systems proposed in the management of pulpless teeth the student or inexperienced surgeon would hardly be able to choose a safe path in which to tread unless they were directed by a strong hand. Pulpless teeth are found in the mouths of the old, the middle-aged, and the young; even the teeth of the first dentition do not escape the ravages of caries, and slow death of the pulp, or its destruction by other means, is not infrequent. Pulpless deciduous teeth and roots may very properly be retained for mastication up to or about the time of the expected eruption of their successors. At this point, however, I will omit their further consideration.

For convenience of treating the subject of the management of pulpless teeth, we will classify them under several headings as follows:

First. Teeth deprived of pulps by means of corrosive medicaments, or immediate operative procedures—cautery, broaches, wooden points, anæsthesia, or accident.

Second. Death of the pulp as a result of capping or filling, from rapid thermal changes.

Third. Death from partial luxation, as from a blow or fall, or, from torsion in correcting irregularities, or from imperfect or partial extractions and replacement of tooth.

Fourth. Death from gradual exposure by caries, or some form of abrasion or erosion.

Fifth. Death from exposure of the pulp through salivary deposits, exposing the apices of roots by displacement of tissues, or from the development of pockets resulting from the so-called Riggs' disease and their extension to or around the apices of roots.

Sixth. Death from irritation by pulp-nodules or strangulation, and from unknown causes.

From this classification, imperfect as it is, you will readily agree with me that no single method of operation, surgical or therapeutic treatment, will suffice to meet all indications in the treatment of irritations, inflammation, or abscess. From a somewhat extended experience in the conservation of pulpless teeth of all classes, covering a period of nearly twenty years, in one city, with few birds of passage as clients, my records now show, not hundreds, but thousands of teeth treated and the roots filled, with few recurrences of abscesses or open fistulæ.

My method of procedure is as follows for Class One: In the management of this class of pulpless teeth there are three things that I invariably insist upon and carry out faithfully. First, complete disinfection; nothing is allowed to enter the pulp chamber or canals that is not placed there by my own hands, by means of clean and sterilized instruments; water and saliva are rigidly excluded. Second, no powerful coagulators of albumen are introduced into the pulp chamber or canals prior to the removal of the pulp. Third, the root filling material must be innocuous, tabooing the incorporation of antiseptics or disinfectants as a component of the filling material. If I have destroyed the pulp by any of the methods above spoken of, immediate extirpation under a local or other anæsthetic, by the cautery, wooden point (a barbarous method), or if it is in a recently fractured tooth, I assist the cessation of hemorrhage, then swab or syringe the pulp chamber and canals with equal parts of peroxide of hydrogen and a one-thousandth solution of bichloride of mercury until they are free from blood and serum. The root is then desiccated with absolute alcohol and heated air, and filled at once. If I have destroyed the pulp with arsenic or other corrosive, at the end of two days or thereabouts the corrosive is removed under antiseptic precautions, keeping the tooth and cavity dry while a dressing of tannin and glycerine is applied to the devitalized pulp, first puncturing it to allow the congested blood to escape. This dressing is covered with gutta-percha, through which two or three perforations are made with a pointed instrument to allow any confined air to escape. This is allowed to remain eight days, when the dressing is removed. The rubber-dam is adjusted over the tooth, and the pulp is extirpated with suitable sterilized broaches. It will be found healthy and much reduced in bulk by this treatment. The pulp chamber and canal or canals are to be washed and swabbed with the peroxide and bichloride solution above mentioned, the root desiccated and filled at once. The roots are not reamed or drilled, but access is obtained by freely opening the pulp chamber.

Class Two. In the management of this class of pulpless teeth we generally find little trouble in diagnosis from the observance of three conditions, one of which is always present, *i. e.*, encystment of the apex; a dormant or cold abscess; or a fistulous tract leading from the end of the root externally or occasional lifting the peridental membrane from the root, and pus found escaping at gingival margin.

Encystment.—This may be suspected if the tooth has been free from tenderness in mastication, or when it is unaffected by thermal change, and the canals are dry when opened into for the first time. Absence of odor is also to be noted. Treatment: disinfectant dressing and immediate root filling.

Cold or dormant abscess.—The rubber-dam being adjusted and the tooth and drill bathed in terebene or terpinol, the pulp chamber is entered. The contents of the chamber and canal are at once bathed with a penetrating disinfectant, which is allowed to remain for a few minutes. The débris is removed and the pus or watery exudation is drained through the canal. The peroxide and bichloride solution aforementioned is then injected or pumped into the territory beyond the apex of the root until it will come out clean; the roots are not drilled or reamed unless they are carious. A slender strand of cotton wool, saturated with terpinol or other essential oils, is packed in the root, not very lightly, and the pulp chamber filled with dry cotton, over which is packed some soft gutta-percha. This is perforated to allow air or any mephitic gases to escape. The patient is dismissed for ten days. On his reappearance the dressing is removed, the tooth being left dry. In most cases it will be found that the cold abscess has disappeared; this is determined by the absence of pus or moisture, and freedom from tenderness on percussion of the tooth. Should moisture exude into the canal the treatment must be repeated. The secret of the value of a root-dressing composed of one or more essential oils is this: At a temperature a little less than 95° F. camphors are slowly but certainly deposited from the oils, and vaporized almost immediately, so that the recently cleansed surface of a dormant abscess is stimulated to reproduce tissue which will replace that already dissipated by the distension of the peridental membrane and the formation of an abscess. These camphors are non-irritant disinfectants.

To introduce a powerful escharotic or coagulator of albumen in the treatment of a cold abscess, not providing for drainage, would be most disastrous, and would generally lead to the formation of an acute abscess. It were far better practice to cut through the gum and alveolar process and provide an outlet at once than to attempt such a practice. The accidental forcing through the apex of a root, of any septic matter, is always to be avoided, and even the greatest care exercised by the immediate and indiscriminate root-fillers is not sufficient to prevent much suffering and the occasional loss of a valuable tooth from inadequate disinfection. Time is always a factor in the destruction of microbes and their spores, and the disinfection of infective dentine is a matter of no small importance when it is hoped, by filling a root, that the operation will prove permanently successful. The future welfare of the cementum and pericementum is largely dependent on complete disinfection of the dentine prior to root-filling. The practice of leaving antiseptics and disinfectants within the root canal or pulp chamber as a safeguard against future trouble is delusive and is not founded on a knowledge of their potency in such situations.

Fistulæ—When a fistulous tract leads from the apex of a root to the gum or elsewhere, cleansing the canal of débris, disinfection of the dentine, and injection or pumping through the canal and fistula of eugenol, terebene, or five per cent. carbolic acid, and immediate root-filling, is generally permissable. When there are complications of caries or necrosis of the alveolar plate, surgical interference is required. In some cases of cold abscess, and more frequently when there is an open fistula, small blackish nodular deposits may be found around the apices of the affected roots, which it is needless to observe should be removed before the abscess will heal.

Class Three. Treatment: the same as for Class Two.

Class Four. In very many cases of pulpless teeth, from gradual exposure and death of the pulp, we find either encystment or cold abscess; more frequently the latter. This has already been sufficiently described in detail. When the pulp dies from mechanical abrasion or some form of erosion, we have been surprised to find that in nearly every instance the apices of the roots have been encysted, and such teeth in consequence are fit subjects for immediate root-filling when thoroughly disinfected.

Class Five. In the treatment of this class of pulpless teeth, when it is thought desirable to retain them in the mouth I have found that immediate root-filling is not to be practiced with impunity. The peridental membrane, remaining on the cementum, detached, or with only a loose hold upon it, is so feebly vital that the most careful stimulation and the retention of temporary dressings in the canals until the fistulæ have healed from the bottom outwards is most productive of good results. My usual practice is to remove débris and the pulp, cleansing the canals, as in Class One, then pack the roots tightly with threads of cotton wool, saturated with

℞.	Ol. Cinnamon - - - - - -	m. xx,
	Ol. Gaultheria, Terebene - - - -	aa m. xxx,

and seal the crown cavity with hard gutta-percha. This dressing is generally allowed to remain from one to six months, when the root is filled permanently.

Class Six. In the management of this class of cases circumstances generally point to the necessity for temporary root dressings in order to prevent pain and swelling of the face. Whenever any uncertainty exists in the mind of the operator about the possible outcome of the hasty filling of a root, the interest of your client and sound judgment will dictate the course to pursue, which may, and probably will be, the temporary dressing with a perforated gutta-percha covering. In the consideration of the various classes of pulpless teeth as they are met with in daily practice, I am not unmindful of possible complications; very many cases, indeed, are not seen by the surgeon until pain has driven the patient to him for aid. Certain relief is always afforded by drilling directly into the pulp chamber, supporting the tooth with the fingers, or producing torsion with a ligature held in the hand of an assistant. This operation is always to be preferred to drilling through the process, unless the patient has great fortitude, it is convenient to apply a local anæsthetic. If the swelling is great and the abscess can be reached conveniently with a bistoury, that operation will be indicated. After entering the pulp chamber, and gently removing the remains of the pulp, under antiseptic precautions, very great comfort may be assured the patient by painting the dried gum with equal parts of chloroform, tincture of aconite root, and tincture of iodine, and the immediate administration of $\frac{1}{10}$ gr. pills of calcium sulphide every fifteen minutes until four or six have been taken, or thirty drop doses in water of fluid extract of Tonga every fifteen minutes. The drill hole should be stopped very loosely with iodoform cotton or cotton moistened with an essential oil, for two days, when all soreness will have disappeared and the root may be cleansed and dressed as mentioned in the consideration of Class Two, under the sub-heading of cold abscess. Occasionally pulpless teeth are elongated, and when the jaws are closed, pain is produced. This can be obviated by grinding the points or cusps of the molars and bicuspids, or other occluding surfaces.

I have no desire to lengthen this already long paper, but may I be permitted to observe that much of the success in the management of pulpless teeth is due to the thorough removal of all pulp tissue and other foreign matters, and the fidelity of filling the roots with a substance not porous or corruptible by the fluids of the mouth, or the products of microbes, and free from intermixed antiseptics? No dependence is to be placed in the permanency of incorporated antiseptics in root-fillings. I believe it to be a mistaken idea that only the apex is to be sealed, and would regard it as a step in advance, if all surgeons would abandon the stopping of roots with cotton wool, silk, or other vegetable fibre saturated with antiseptics, and adopt either an incorruptible oxychloride, oxyphosphate or gutta-percha as a root-filling. All care and skill exercised in the disinfection of dentine, and the treatment of abscesses goes for nought after the lapse of a few years, when reliance is placed on makeshifts of root-filling materials. Unless the root of a tooth is thoroughly well stopped by the filling, discoloration is not the least disfigurement of the anterior teeth, to say nothing of chronic peridental inflammation and the establishment of fistulæ and the recurrence of previously cured abscesses, with all the attendant evils and much suffering to the patient.—*British Journal.*

REPARATIVE POWER OF THE TONGUE.

Dr. J. Hobbs says: A laboring man received a severe blow beneath the chin while his tongue was protruded from his mouth. The organ was nearly divided three inches from its tip, by the teeth, the main arteries remaining intact at its under surface. The wound was brought in apposition by means of fine silk sutures, one of which cut through on the third day and had to be replaced. Ice was kept upon the tongue for eight or ten hours, and then a lotion of permanganate of potassium was used. No inflammatory reaction occurred, on the sixth day all the sutures were removed, and on the thirteenth day the wound had completely healed, with perfect restoration of taste and sensation.—*Medical Press.*

Parotitis and Pelvic Disease.—Mr. Stephen Paget has collected no less than 101 cases of parotitis consequent upon injury or disease of the abdomen or pelvis. Of this number 10 were due to injury or disease of the urinary tract; 18 were due to injury or disease of the alimentary canal; and 23 were due to injury or disease of the abdominal, the peritoneal, or the pelvic cellular tissue. The remaining 50 cases were due to injury or disease, or temporary derangement of the generative organs. Under the latter term are included slight blows on the testis, the introduction of a pessary, menstruation and pregnancy. This form of parotitis appears to be non-pyæmic, to have no definite incubation stage, and to end very often in suppuration. Mr. Paget considers that the sequence of disease is due to influences acting through the nervous system.—*Dental Register.*

Correspondence.

"I charge you that this epistle be read."

Dr. Watt:—Two incidents have occurred in my practice lately that may interest your readers—may possibly give some one a point on the use of emetics. The first case was where I gave a young Englishman nitrous oxide, and extracted six teeth. After the operation he said that one of the teeth was lodged in his throat, he could feel it with his finger. I looked in his throat but could not see it, even by using a mouth mirror, and I was sure I had not dropped a tooth in his mouth. We gathered the slain, but could find only five teeth. One was missing. I became satisfied that the patient was right and gave him a large dose of ipecac. I was called away for a few minutes to see another patient, and left my student in charge to await the result of the emetic. When I came back, I found that the action of the ipecac was too slow for the patient, and he had taken another dose, and was also poking his finger down his throat and retching terribly. At about this point, my littleboy, seven years old, came in and learning the situation, began searching the floor and soon found the missing tooth. Imagine the elation of the operator on recovering the tooth, the depression of the patient waiting for that emetic. The emphatic assertions of feeling the tooth in his throat never left him until it was found on the floor, thus collapsing his idea and making a ludricous ending to my tragicomedy.

The other case was a young man for whom I had set a Logan crown on a superior central root, and attached it temporarily with gutta-percha. The following day he came to me and said that while at dinner he had swallowed the crown. That his father, who was a physician, had given him an active emetic but could not raise the crown. I made an engagement to set another, and told him I thought he would not suffer any pain from the swallowed crown, as the pin was covered with gutta-percha. The next morning the young man came into my office with the missing crown in his hand, and said that his mother found it under the dining table. Here was a happy ending of another case of hallucination.

P. L. F.

Editor's Specials.

"Write the Vision and make it plain."

FRIENDSHIP.

"AND WHAT IS FRIENDSHIP BUT A NAME?"

VERY much more, Mr. Hermit. A *name*, indeed? A reality, sir. A something that will do to rely on,—to tie to, if you like. Something too sacred, too holy for joke, sneer, or ribaldry. An emotion whose name—friendship—has no synonym. It may be counterfeited, but can't be nicknamed. The poor hermit, crazy with disappointed love, didn't know what he was saying.

We tried a dose—viz. of friendship—not long ago, and it acted like a charm—yes, "charm" is what the hermit called it; but it didn't lull to sleep.

But plainer—it was our desire to attend the late meeting of the American Medical Association with its dentoral section. "Practice makes perfect"; and we were learning to bear disappointments, and had become almost reconciled to the one on hand, when another overwhelming one struck us "where we live." It was bearable. Dr. Allport, a special friend since 1856, and Dr. J. Taft, ditto since 1835, came in on us almost unannounced, and three boys had a day of it. Though we have rather liberal views, this was a day of "close communion." The enjoyment was double distilled, rectified and concentrated. "What is friendship but a"—heaven on earth? Yea, verily! But not every lonely "shut in" editor has two such friends. But we have. J. Taft, W. W. Allport, Western Hemisphere, Earth, Solar System, Universe, Buonds of Space. This is their address, reader. You can find them, if you need friends, and if worthy of it, you will be overshadowed by their friendship.

ABSTRACTS WITH COMMENTS.

BLINDNESS AMONG MEN.

"As a rule," says a writer in a New York exchange, "the aged blind among the poor, maintain themselves, and perhaps contribute to the support of the family, by begging, being led to their accustomed places on some frequented thoroughfare by the married son or daughter, with whom they dwell, on their way to work in the morning and back again on their return in the evening. It is a fact, that cannot escape observation, that the blind men predominate; that there are to be encountered in a stroll, ten blind men to one blind woman beggar, and patient inquiry reveals the fact, that blindness is as rare among women as baldness. The writer has discovered only three blind women seeking alms to the thirty blind men he has encountered on the populous thoroughfares of the east and west side. The hunters on the prairies allege, as one reason for wearing their hair long, that it preserves the eyesight, and perhaps we may find in the similar custom of women, an explanation of the fact that blindness is comparatively so rare in their sex."

Some artists let their hair grow. They need sharp eyesight; but we have always regarded their locks as an advertising dodge. But we'll apologize when the time comes. Baldness, as well as blindness, predominates in men. Give long hair the credit.

CREMATION.

Joaquin Miller believes in cremation and has prepared his own funeral pile. It is on the top of a high hill. "When death comes," he says, "I shall be laid on that high heap of wood, in the blankets in which I die. The men who lay me there, will light their cigars with the same hand that lights the wood-pile and go down to breakfast. While I, phew! up to God in clouds of smoke."—*Medical Register.*

A good idea. If fellows come around us smoking, let it be after we are dead. But we can't afford any such wood-pile.

ERRORS OCCURRING IN MICROSCOPICAL OBSERVATIONS.

Errors are very liable to occur in observations made with the naked eye, but they are usually under such circumstances that we can correct them by closer observation aided by some other sense than that of sight. When such errors occur during observations with the microscope, it is sometimes more difficult to discover them. As an example of this, a member of the San Francisco Society of Microscopists, at a recent reception, exhibited a small coin under a low power. A strict record was kept of the 200 visitors who viewed the object, and of this number about 20 per cent. saw the elevated portions of the surface as depressions. After a more careful and prolonged examination, about one-half of this number were able to see the parts of the object in their natural relation to each other, but the remaining 10 per cent. of the observers could not see the elevation otherwise than depressions.

This is a simple experiment, and those having microscopes will do well to try it.—*Pacific Record.*

If any one in the profession is a more enthusiastic admirer of the microscope, and microscopic research than is the editor of this JOURNAL, he is ready to exchange sentiments with that individual at once. So earnest were his thoughts in this direction that when but sixteen years old he made a compound microscope that defined up to a hundred diameters, as clearly and accurately as those in general use at that date. The JOURNAL, however, has tried to guard beginners, and even experts against too positive statements about things not yet sufficiently tested by time, skill, and experience. If twenty per cent. fail to correctly see a simple object with low power, what per cent. must fail with a complex object and high power? Of course we all recognize that a good degree of exactness may be reached by persistence in and comparison of observations. But what the JOURNAL has opposed is the positive assertions made by beginners and tyros, or by experienced observers when the powers used must be so high as to render the inferences more or less doubtful. Think of an assertion that bacteria, or some things are seen going into the dentine through the natural openings of normal and sound enamel, and that this is the explanation of dental decay.

Microscopy and chemistry are the leading agencies that are to broaden, and deepen, and clarify dental science and its collaterals. And a few mistakes, made even by earnest seekers after truth, will not ruin the cause. When a new theory is put forth, however plausible it may seem, there are others who wonder if that is true, and they investigate. Incredulity is often valuable. Nearly three thousand years ago, a wise man said, "He that is first in his own cause seemeth just; but his neighbor cometh and searcheth him." Error is not very dangerous while truth is unbridled.

RECOVERY AFTER DISLOCATION OF THE SPINE.

The *Chicago Tribune*, November 22, 1887, says: It is reported from Duluth, Minn., that Dr. Slaughter, a well-known physician of that city, has treated successfully a man 55 years old who fell from a scaffold and dislocated his neck. The spinal cord was not compressed by the dislocation. Dr. Slaughter at first prescribed absolute rest; two days later he applied an apparatus and reduced the dislocation. There is now every prospect that the man will get well.

The weather may be cold at Duluth—we might find out by asking Proctor Knott of Kentucky—but the climate must be healthy where a man may "break his neck" and make a good recovery. The vital power of a good human constitution has not yet been found out. The late civil war gave us some wonderful revelations in this line.

Some may recollect the wound of General Shields in the Mexican war. A ball passed through his body, from front to rear, penetrating one of his lungs. To prevent internal hemorrhage a silk handkerchief was drawn through the wound, and he was taken on horseback to a place of rest. He recovered, came home and was elected to congress. We recall the rhyme of a local paper, after the general had been elected over Judge Breese. It was about this:

"Some men have lost their heads and lived,
But stranger far than these,
The shot that passed through Shields's breast,
Instead of him killed Breese."

But we ought to learn a lesson from such recoveries. In the practice of any department of the healing art, we should guard against a too common recognition of "hopeless cases." Some cases may be hopeless, but too often the hopelessness is in the mind of the attendant. "According to your faith be it unto you" has a wider range of application than some incline to give it. In rhyming about Madam Blaize, Goldsmith says,

"The doctors found when she was dead
Her last disorder mortal." Soon enough, too.

It has been the aim, in these pages, to make them seem more like social, friendly conversation than like scientific discussion. Friendly verbal intercourse is far more suggestive of thought than formal lectures and essays. The Great Teacher seems to have been ever ready for an interruption, in the shape of friendly inquiry, or unfriendly criticism. Sermons now are not on the same plan. As we cannot often meet in conversation with our readers —*our friends*—we have tried this as a substitute. But we don't think we have succeeded very well, and hence tell you what was the aim, hoping you will "accept the good will for the deed."

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 83 Jefferson St., Toledo, O.]

ATTACHING RUBBER TO A SILVER BASE.—DR. ESSIG says that this can be successfully done by interposing a thin sheet of tin between the rubber and the silver, this being done after the anchorages are soldered to the plate and before they are bent in hook form.

TO PREVENT DISCOLORATION.—Solutions of iodoform, if exposed to the light, soon become discolored from liberation of iodine. The discoloration will not take place, according to F. Coreil, if the solutions are kept in bottles of amber glass, which should, therefore, always be used.—*Pharm. Era.*

TO TIGHTEN LOOSE TEMPORARY PLATES.—Thoroughly dry the plate, and at the points opposite the greatest absorption of the alveolus, roughen with bur or scraper; line the palatal surface of the plate with gutta-percha. I use base plate to the extent of absorption. Heat it and insert the plate as hot as possible, and have the patient bite or press the plate up as firmly as possible, repeat until sufficient gutta-percha has been introduced to make the plate tight. This is specially good for lower plates.—H.R.N. in *Archives.*

A NEW DENTIFRICE.—M. PAUL VIGIER several years ago discovered that the addition of powdered talc to water prevented the deposit of calcareous salts in boilers. Applying this fact to dental therapeutics, he has devised a dentifrice which, he says, prevents the formation of tartar. The formula is as follows: Powdered steatite, 60 grammes; desiccated alum, or cream of tartar, 5 grammes; powdered cochineal, 10 grammes; essence of peppermint, 10 drops. Any other perfume may be used if desired.—*Gazette Heb.*

Test for the Salts of Lead.—Dr. T. G. Griswold gives the following: This test is cochineal tincture, which, as is well known, has an intensely red color. The cochineal added to water, or to any solution to be tested, will at first exhibit its own characteristic red color; but if the water contains the smallest quantity of lead, it will immediately be turned to a bluish color. This simple test we have tried and found it reliable, and much more convenient and practical than any of the other tests for lead, heretofore recognized and recommended by chemists.—*Med. Brief.*

Effect of Peroxide of Hydrogen upon the Teeth.—Dr. W. H. Rollins says: This preparation is in such extensive use in dentistry that a word of caution may be of value. I purchased a solution of a reliable apothecary in order to have a fair sample, and into an ounce of it I put a tooth, which after a few hours [four] began to show marked signs of being acted on. The enamel had lost its lustre entirely. In two days the whole tooth became so elastic that it would bend in the fingers, and I could and have used this method of preparing teeth to be cut in a section machine.—*Cosmos.*

Smith (A. H.) on Sarcoma of the Mouth, Reaching a Fatal Result in Thirty-four Days.—The disease began as a small elastic tumor in the roof of the mouth, adjacent to the first molar tooth on the left side, and was thought to be an abscess. Its subsequent course suggested malignancy, and the suspicion was confirmed by microscopic examination. The age of the patient was three and a half years. The disease rapidly invaded the palate and implicated the lower jaw. Two days before death a tumor, probably of a similar nature, developed in the right side of the abdomen.—*The Post-Graduate.*

To Strengthen the Teeth on Plaster Casts.—Dr. E. L. Patchin writes: I suggest to those that have had trouble with plaster teeth breaking from a model. When your impression is ready to pour stick tacks (business ends down) into the depressions of the teeth in the impression, allowing the head to protrude so as to give good anchorage in the body of the model after being poured. I find the small sharp tacks the best, different sizes to suit different cases. I also find that tin foil will peel from rubber more readily if soaped when put on to the model. You will find you will have very little use for acid.

Erosions.—By way of experiment, on April 7th, 1886, Dr. W. D. Miller set a piece of ivory, by means of cement, in the cavity of a right inferior bicuspid, where the loss of substance by erosion was so extensive that it would have exposed the pulp if the latter had not been protected by secondary dentine. The piece of ivory at the time it was set had the form of the natural contour of the tooth. On the 23rd of April, 1888, a little more than two years later, the piece was removed for examination and showed two very distinct parallel horizontal furrows. The surface had the very fine polish characteristic of abraded dentine. No one examining the piece of ivory would hesitate for a moment to pronounce it a typical case of erosion.—*Ind. Practitioner.*

Nerve Section for Neuralgia.—Dr. Garretson recently performed at his clinic a delicate and skillful operation. It was the resection of the superior maxillary division of the fifth nerve, for an intense and persistent neuralgia. The skin was dissected back, exposing the anterior external wall of the antrum of Highmore. A circular opening, about an inch and a quarter in diameter, was made in this wall by means of the surgical engine. Part of the floor of the orbit holding the nerve was then removed in the same way. Finally, the spheno-maxillary fissure was enlarged, so that the surgeon could enter the speno-maxillary fossa and cut off the nerve at its exit from the foramen rotundum. The patient is relieved of his neuralgia and is doing well. Prof. Garretson has performed this beautiful operation a number of times, and always successfully.

The Chemical Incompatibility of Antiseptic Agents.—Dr. Robert Boxall, of London, in reporting his experiments with antiseptic agents, says that the following incompatibilities were observed :

Corrosive sublimate and iodine, corrosive sublimate and soap, carbolic and iodine, carbolic and condy, carbolic and olive oil, iodine and soap, salicylic acid and condy, salicylic acid and soap, condy and olive oil, condy and glycerin, condy and soap.

The moral conveyed by the above experiments is obvious: avoid as far as possible the admixture of antiseptic agents and their contamination with lubricants and with soap when incompatibility exists. For instance, in employing corrosive sublimate it is advisable to use the same solution for disinfecting the hands (carefully avoiding contamination with soap) and for cleansing instruments as for irrigating the parts, to employ a mercurialized lubricant, and to use alembroth dressings. If for any reason it becomes requisite to substitute one antiseptic agent for another, a second should be chosen which is not incompatible with the first, and the same precautions should be observed throughout the series.

Composition for Duplicating Models.—Dr. F. S. Whitslar writes: The following is the formula for making the "mysterious black elastic composition" known to but few until recently, for duplicating models where there is an undercut, without taking more than one impression:

5¼	lbs. genuine Irish glue.
1¼	gallons black molasses or honey.
½	lb. purified India-rubber dissolved in alcohol.
1	oz. Venice turpentine.
6	oz. glycerine.
4	oz. strong vinegar.

Directions.—Soak the glue over night and drain in the morning by means of a covered colander, for one hour. Boil molasses and skim for twenty minutes. Add the India-rubber and stir until it combines with the molasses. Add glue and boil for forty minutes occasionally stirring the mass. Put in the Venice turpentine, glycerine, and vinegar, and boil six or seven minutes, and pour.

How used.—Place a band of tin around the model, leaving a space of nearly one inch between the model and band, pour the compound and let it stand twelve hours in a cool place. The compound may be used many times by cutting into small pieces and melting over; if too hard add a little molasses. The model will separate from the compound more easily by coating model with soap-stone. Use a slow fire.

Ulcerations and Abscesses.—Dr. L. C. Ingersoll in his *Dental Science* says: In probing an abscess through the external opening, the probe follows the fistulous canal, a fibrous soft tissue, and comes in contact with no hard tissue till it reaches the very end. In probing deep seated ulceration through an external opening, the instrument touches some hard tissue almost immediately, either the root of the tooth or roughened bone. An abscess has a soft tissue membrane forming a sac, lining the pus cavity in the bone and containing the pus; ulceration in the same locality has no such lining of the pus cavity, the pus freely bathing the surface of the wasting bone and of the root. Abscess involves none of the surrounding tissue in suppurative disease. Ulceration involves all contiguous structure. An abscess voids pus through a formed tube; ulceration through one of several partings through the overlying tissues. Deep-seated ulcerations usually result from the breaking up of a chronic abscess, greatly favored in its progress if there is any scrofulous or syphilitic diathesis.

In treating ulcerations of a root, if any spicula of bone are found loose they should be removed at once. The roughened condition of the bone indicates caries. It should be scraped and rendered smooth, the fragments carefully removed. Then apply aromatic sulphuric acid, 50 per cent. dilution. This will dissolve particles of bone still remaining, and act as a powerful antiseptic and tonic. For after-treatment, at intervals of two or three days, use solutions of chloride of zinc, sulphate of zinc, eucalyptus oil and creosote, alternately. If pus continues to form after the first application of sulph. acid repeat the application, or use permanganate of potassa.—*Items.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Missouri Dental Association holds its annual meeting at Pertle Springs, Tuesday, July 10, 1888.

Minnesota Dental Association meets Wednesday, July 11, 1888, at St. Paul.

National Dental Association at Washington, D. C., July 24, 25 and 26, 1888.

The American and Southern Dental Associations hold a joint meeting at Louisville, Ky., August 28, 1888.

Ohio State Dental Society meets at Cincinnati, O., Tuesday, October 30, 1888.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The next meeting of the National Association of Dental Examiners will be held in Louisville, Kentucky, on Monday evening, August 27th, at eight o'clock, and at other times during the week, between the sessions of the American and Southern Dental Associations. It is important to have every State Board represented.

Fred. A. Levy, D.D.S., *Sec'y.*

ILLINOIS STATE DENTAL SOCIETY.

Election of officers to serve at quarter-centennial meeting, 1889. Place, Quincy: President, Dr. Geo. H. Cushing, Chicago; Vice-President, Dr. J. J. Jennelle, Cairo; Secretary, Dr. Garrett Newkirk, Chicago; Treasurer, Dr. T. W. Pritchett, Whitehall; Librarian, Dr. W. B. Ames, Chicago.

THE NORTHERN OHIO DENTAL SOCIETY.

The Northern Ohio Dental Society while not largely attended held a very interesting and profitable meeting at Painesville, on May 8, 9 and 10th. The following papers were read and discussed:

Therapeutical action of obtundents, by Dr. W. H. Whitslar, Youngstown. Labial and palatine cavities—cause, mode of preparation, and with what to fill them, by Dr. H. F. Harvey, Cleveland. How should Dental Societies be Conducted? by Dr. L. P. Bethel, Toledo. Detrimental effect on the development of the osseous system by the present method of education, by Dr. S. B. Dewey, Cleveland. Clinic, crowning, by Dr. J. R. Owens, Cleveland.

Officers for the ensuing year were elected as follows:

President, H. F. Harvey, Cleveland; Vice-President, F. H. Lyder, Akron; Recording Secretary, W. H. Whitslar, Youngstown; Corresponding Secretary, S. B. Dewey, Cleveland; Treasurer, Charles Buffett, Cleveland.

The following resolution of condolence was sent to Dr. Taft:

OUR MOST ESTEEMED FRIEND.

We, the members of the Northern Ohio Dental Association in annual session, beg leave to express our heart-felt sorrow and sympathy for you and children in this sore affliction, in the sudden removal of wife and mother from the home circle here to the abode of the faithful, in the world of light and life, where separations and sorrows never come.

C. R. Butler,
F. S. Whitslar, } *Com.*
J. R. Owens,

Our Aftermath.

Dr. Jas. M. McManus, of Hartford, has sent out a fine cabinet photograph of the statue in Bushnell Park, Hartford, Conn., to "Horace Wells who discovered anæsthesia, November, 1844."

"The Lost Transactions" of the Dental Society of the State of New York for 1879, 1880 and 1881, have at last been issued, in one volume, and may be had of the Secretary Dr. J. Edw. Line, Rochester.

Queer Effects of Cocaine.—According the Cairo *Daily Bulletin*, our friends of the Illinois State Society, at its late meeting in Cairo, got into a hot discussion on cocaine as an anæsthetic—so bitter that the report was ordered stricken from the records.

What Sarcophagus Means.—It may be new to many that the word "sarcophagus" means literally flesh eater, and was applied to coffins, from the peculiar kind of stone of which the ancient Roman coffins were made. The stone is supposed to have been a species of lime-stone, and it is claimed had the property necessary to entirely consume a body, with the exception of the teeth, in forty days; hence the name.—*Pac. Record.*

The Modern Specialist.—I am a strong advocate for specialties, special studies, and believe in specialists; but I do not believe that it is correct for every new graduate to rush off to Europe at once, to study a certain specialty for three months, then return and begin his special skilled practice, with one-sided ideas and but little practical experience. It takes more than this to make a specialist.—Dr. Edward Borck, *The Medical Record.*

Bill Nye on the Gastrulæ.—Gastrulæ, as you know, are of two classes, viz.: malignant and intermittent. It is the first class that is most likely to get their blastopore plugged up. Then trouble begins. Cilia begins to erupt on the epiblast and microbes break out all over the duplex. You can't be too careful about this. A blastopore, if I've got the right idea of what a blastopore is, should be brought in every night, or the boys may get hold of it and plug it before it is ripe. I would rather see an epiblast of mine, or a blastopore, or a gastrulæ for that matter, in its grave, than mixed up with an investment of cilia, or any other doubtful financial matter.—*New York World.*

Maxims.—When young folks has dere teef ter wear out early dee gits ter be long-lived.

Soon ez er chile's toof is jerked outen he mouf ef de chile'll put de tongue in de holler he'll heve er gole tooth dar someday.

Ef yer fling er chile's toof whar de dogs kin git hole uv hit, dat chile'll have er dog-tooth.

You kin whitin' teeth mighty good brushin' 'em wid er fig-root brush.

Black soot make white toof.

Folks on er plantation dee cures toofache by rubbin' de misery-jaw wid de jaw-bone uv er hog.

'Nother folks 'll cure de same by des puttin' in de holler whar de misery be er piece uv de nigh-heel er de meanes' mule on the plantashun.—*Det. Free Press.*

Nervous Indigestion.—Of the New York dentist who tried Christian science and committed suicide because it would not cure his nervous ailment, the San Francisco *Chronicle* says:

"He was evidently suffering from overwork, and instead of the mummery of 'Christian science,' or any similar quackery, he should have tried rest and complete change of scene. One half of the ills of professional men arise from excessive application to pursuits which irritate the nervous system. The overworked brain makes heavy demands on the stomach, and this in turn fails to perform its duties. The result is general prostration, which only rest and careful treatment can cure."

More ills than commonly suppose result from bad digestion, itself the consequence of over-anxiety, improper diet and lack of healthful physical exercise. For a case of this kind more faith may be put in a box of drug store pills than in all the Christian medical science this side of the moon.—*Cin. Com. Gazette.*

THE
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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

A CASE IN PRACTICE.

BY GEORGE W. KEELY, D.D.S., OXFORD, OHIO.

THE case here illustrated is of a Miss aged eleven years. It is not an exceptional one, but may often be seen (to a greater or less extent) in the practice of every operator who is a careful observer of the injurious effects of the *premature removal of the temporary molars.* The temporary teeth have a very important mission to perform, and every one should be carefully preserved, until that mission is fully accomplished. These teeth are as important to the child for the purpose of mastication, as the permanent ones are to the adult. It can be seen from Fig. 1 that the superior *temporary* molars are in place, the first *permanent* one being fully developed, and the second one just appearing. In the inferior arch the first and second permanent molars are fully developed, the first one being in contact with the first bicuspid. This is also the case on the right side. On the outside, opposite the proximal surfaces of the first bicuspid and first molar, on both sides of the inferior arch, the second bicuspids are just ready to make their appearance through the gum, making a prominence on the model as large as the crown of the tooth.

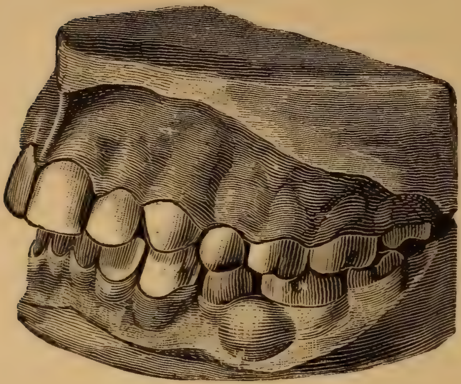

FIG. 1.

When the child was five years old she was brought to me with the inferior temporary molars badly abscessed, when I declined to remove them, and opened into the pulp cavities and let off the pus, thus giving relief. I explained to the parents why I did this, and the evil consequences that would surely result from their removal before the first permanent molars were erupted. I also informed them that this same trouble was likely to occur again, but could be relieved in the same way, and also told them under no circumstances to allow their extraction. Soon after she was taken to their family dentist, and the teeth were removed, he telling them, I "was a crank and could not prove my theory correct." The premature removal of these teeth caused the anterior ones to fall back, and also the earlier eruption of the first permanent molar, which came forward and took up the remaining space belonging to the second bicuspid; and this caused the earlier eruption of the second molar, as it was given additional space, which was the reason for its full development, while above, the retention of the temporary molar retarded the eruption of the second molar, which is just appearing, as stated before.

As a rule, when the temporary molars are prematurely extracted, the first permanent one will erupt earlier, coming forward and taking up a part, or the whole space designed for the second bicuspid, thus crowding the anterior teeth, and often breaking up the normal articulation of all the teeth. It can be seen by the cut that the six superior front teeth are very prominent; so much so that the features and expression of the face are distorted, and correct enunciation is made difficult.

There is no reason to suppose this case is an inherited deformity, for both parents have normal arches; therefore we claim this was *wholly caused* by the premature removal of the temporary molars, for the reasons already given.

The roots of these molars, if allowed to remain, will have a tendency to keep the first molar in place when erupting. It has been claimed that, as the crown of the second bicuspid is formed before the eruption of the first permanent molar, it will necessarily keep it in place. This theory is proved incorrect by scores of stubborn facts. We have models of both arches, where the temporary molar was prematurely removed on one side, and not on the other. On the one the second bicuspid is wholly or partly crowded out of line, and on the other side, all the teeth are regular, except that the centrals incline to the side where the premature removal occurred. We have others where both second bicuspids are out of line, but generally in the palatine surface, and others where the second bicuspid had made a desperate effort to come in place, but was so crowded by the first bicuspid and first molar, that only a part of the crown is through the gum.

We realize to the fullest extent the patience and perseverance required to treat these molars for our little patients, particularly, as is generally the case, we have to fight the parents and try to educate them. It is to be greatly lamented that there are so many in the dental profession who never hesitate for a moment to apply the forceps to these molars of their little patients, seeming never to have a thought in regard to the injurious consequences sure to follow. In this case the superior temporary molars were removed after the impression for this model was taken, they being held in place by their crowded condition, the retarded bicuspids, could be seen ready to come in place.

The foregoing was published in the JOURNAL of January, 1886, and at that time we did not expect to make an effort to improve the condition of her teeth. The inferior first bicuspids and first molars were *in contact.* When she called again a few months later, I found that the second bicuspids in their effort to erupt, had made a perceptible space between the first bicuspids and molars, as shown in Fig. 1, which is substituted in place of the one used before. Their seeming struggle to come in *place* won my confidence, and I began a system of occasional wedging between the first bicuspids and molars to force the eight anterior teeth forward, as their antagonism did not interfere, and the molars occluded to favor the operation. This occasional treatment was pursued until the retarded bicuspids would no longer allow wedges to be retained, when Fig. 2 was taken, showing the improvement.

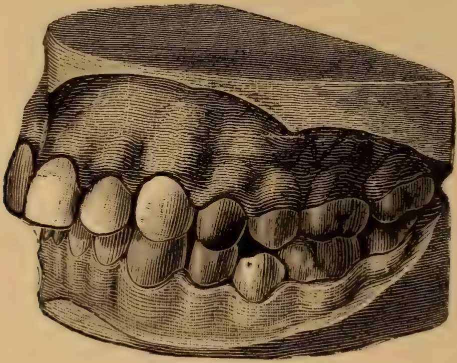

Fig. 2.

We then inserted a spring vulcanite plate to further expand the eight inferior teeth to give ample room for the delayed bicuspids to fall in line. This being nearly accomplished, we found it necessary to expand the four first bicuspids a trifle to complete the operation and insure a perfect occlusion of all the bicuspids. For this purpose we fitted a thin vulcanite plate above, bearing hard on the first bicuspids, and sprung it in place. The cusps of the inferior occluded inside the superior so they were carried out by the contact. After the spring in the plate had done its work, pins were inserted to increase the expansion five or six times. During the six months this plate was worn with perfect comfort. No effort being made to hurry the result, as it was a case that greatly interested me and one in which there was no pecuniary consideration. Six months after this plate was removed, Fig. 3 was taken.

The improvement can be seen from the cut. When the first model was taken, from the cutting edge of the superior incisors back to same of the inferior, on a direct line it was *three-eighths of an inch;* when the second was taken this was reduced *one-eighth*, and the third one reduced it another *eighth*. The teeth

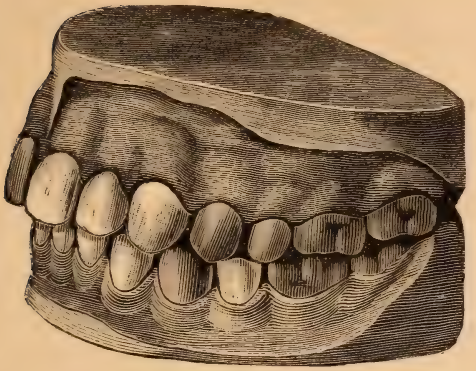

FIG. 3.

are now all in line. Her personal appearance and enunciation are greatly improved. During some twenty years of close observation, we have never seen a single case where the premature removal of the temporary molars *failed* to produce the *evil consequences alluded to*, and it is important that every operator should fully realize this fact.

ARTIFICIAL VELA FOR CONGENITAL CLEFT OF THE PALATE.

BY C. S. CASE, M.D., D.D.S., JACKSON, MICH.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich. March 20, 1888.]

I AM reported to have said at the December meeting of the Chicago Dental Society, that "I did not think the making and introduction of artificial vela difficult." I am aware that I made some strong statements relative to the possibilities of making this department of our art as simple mechanically as other portions of dentistry, for it seemed to me that the paper upon the subject by Dr. E. D. Swain, and much of the discussion which followed was calculated to magnify its difficulties and hold it beyond the reach of the ordinary practitioner; whereas I can but believe that any good dentist who will seek the information and means at his disposal may hope to produce a very satisfactory cleft palate instrument, and one that will improve if not entirely restore the function of articulate speech.

I have two patients with wide clefts through the entire soft and hard palate—both wearing soft rubber vela—who speak with perfect distinctness of articulation; and one of them with so much freedom from the usual nasal tone that a stranger hearing him talk would not imagine there was any physical abnormality. An incident occurred recently which will serve to illustrate this. About three months ago I inserted a cleft palate instrument for Miss H., a resident of Chicago, and being a young lady of considerable intelligence I employed her temporarily as book-keeper and amanuensis, in order to give her all the advantages I could in vocal articulation.

The cleft, which you will observe by the model of her mouth which I hold in my hand, is a small one extending only partially through the soft palate. At first I pronounced it a case for plastic surgery, and upon being told that such an operation had been peformed twice, I found upon further examination that cicatricial contraction from these operations would render it impossible for the velum palati to close the vaso-pharyngeal passage even though perfect union of the bifurcated portions were permanently established.

You all understand that every word we utter which does not contain the sounds of m and n, is made with the pharyngeal passage to the nose entirely closed by the velum-palati acting in conjunction with the pharyngeal muscles; and if this object cannot be fully accomplished either by surgery or artificial means, vocal articulation will not be materially improved.

Notwithstanding the smallness of the cleft, in this case, her speech was as imperfect as the most pronounced case of congenital cleft palate I ever saw. This I afterwards found to be largely due to the failure of cultivating the organs at her command. Being an exceedingly sensitive person her parents and friends had refrained from correcting or assisting her in any way. By the aid of the artificial velum and subsequent vocal instruction, there has been a gradual marked improvement though not nearly so rapid or complete as in the case of the young man whom I had before you three years ago, who, at that time, had worn an artificial palate but two months.

About four weeks ago Walter S., one of the patients who speaks so perfectly,—being on a visit to his parents who reside in Jackson,—called upon me unexpectedly. I was surprised at the improvement he had made in the last year in his enunciation and tone, and not being able to attend to him at once I asked him to sit in the reception room and talk freely with a companion who came with him, and to speak as distinctly as he could, at the same time explaining my reasons. This he did for about half an hour, while Miss H. sat at work a short distance from them. After they had gone I asked her if she noticed anything peculiar about either of the young men. "Only that one of them talked a great deal and told many amusing things which she could not help but listen to." Imagine her surprise when I told her that this was the model of his mouth. You will see by examining it, that it represents a wide cleft extending completely through the soft and hard palate.

Such success, however, is not always attainable even with a most perfect cleft palate appliance, and while it will largely depend upon the scientific perfection of the velum or obturator and the subsequent training in its use, more will be due to the capabilities and perseverance of the patient. The operator, moreover, should be able to appreciate the various powers of the rudimentary muscles in their efforts to make use of the instrument, and, if necessary, perfect its size and shape according to their demands in order that it be made to do its best work.

I do not wish to be understood as claiming that all these things can be accomplished by the novice without difficulty or even without special ability, skill and experience. To make a wagon or a set of teeth requires intelligence and skill, yet these things become simple to one who will put the requisite amount of work into a careful study of the principles involved and acquire the successive steps in their mechanical construction, and what I claim, is, that artificial vela and obturators for congenital cleft of the palate are by no means beyond the possibilities of these simple demands.

The difficulty which the dental profession labors under today, is the need in text-books of proper and sufficient instruction relative to the practical steps of this work. To those who have not made the attempt to follow the directions of some text-book in the construction of their first case, such a statement may seem improbable, and especially to a casual enquirer who turns over the pages of "Kingsley's Oral Deformities" and sees the space given to this department with the array of illustrations and descriptions. Yet were that one to attempt to use it as a guide in the construction of means for producing that which is so perfectly described, *i. e.*, the Kingsley velum, he would find it sadly deficient in specific directions for practical procedure; and now the same thing can be said of the *American System of Dentistry.*

It would seem as if text-books which pretend to teach this department of dentistry should fully describe the successive steps in the operation, especially in regard to that which taxes so greatly the ingenuity of the beginner, and for the want of proper working directions too often results in a bungling and useless affair that leads him to resolve never to try it again.

Some years ago I read a paper before this body, which was subsequently published in the *Cosmos*, describing "a method for producing the Kingsley velum."* By this method the work can be accomplished with such ease, rapidity and mechanical nicety, and when finished is so completely under the control of the operator, to change the shape, size, and thickness of the artificial palate that I can but repeat, "I do not think the making and introduction of artificial vela more difficult than many other portions of dentistry."

There is one thing, especially which I wish to deprecate, and that is the tendency of writers to overestimate the difficulties of taking an impression for an ordinary artificial velum. The space that is usually devoted to details of various methods and the introduction and exhibition of paraphenalia, imply the necessity of duplicating in the model, much that is of no practical use whatever, and involve difficulties, that to some, seem almost insurmountable. In the *American System of Dentistry* is elaborately described a very ingenious method of forcing plaster into the nasal portion of the cleft through a rubber tube by the use of a piston syringe. A similar machine was shown and its use described by Dr. Swain, and I suppose every one, I, among the rest, has some pet scheme for taking impressions of these difficult and, unless it be in rare and anomalous cases, unnecessary parts.

With the view of determining the requisites of an impression, let us examine the needful shape of a cleft palate instrument, the object of which is to securely close the palatal cleft and possesses a movable attachment, by the aid of which the patient can at will prevent sound from passing through the nares.

If you wish to make a soft rubber velum with a plate upon which it can be buttoned so as to retain it in position, you will first see that the mouth is of such shape as to firmly sustain a supporting plate, (and it will be a very odd mouth indeed which will not, either by clasps or other means, retain some kind of a plate). This favorably determined, an impression of the nasal border of the cleft with a view of producing over-lapping and sustaining extensions to the rubber palate, will be entirely unnecessary; in fact, the oral or inferior border of the cleft, and that portion of the roof of the mouth over which the lateral palatal wings are to extend, are the only parts that are absolutely essential to duplicate in the first model.

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* The same has been revised and recently published in the *Archives.*—Ed.

Dr. Kingsley says: "It is only when the floor of the nares is used to support the palate that it becomes necessary to obtain a more complicated impression, one that will represent not only a portion of the buccal cavity, but all the superjacent nasal cavity."

The only object that I have ever seen for extending the instrument any distance into the cleft of the hard palate, is to obtain a vertical thickness of the rubber palate and consequent rigidity, sufficient to support the velum when buttoned to the sustaining plate. This can better be shown by a drawing.

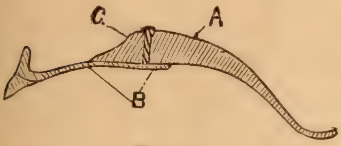

FIG. 1.

Fig. 1 represents a section through the mesial line of a soft rubber palate A, buttoned to the sustaining plate B, by the pin C. It will be noticed that the anterior end of the palate, being thick, will have a longer and more rigid bearing upon the pin of the plate with increased powers for sustaining the velum, to which it should gradually taper in thickness.

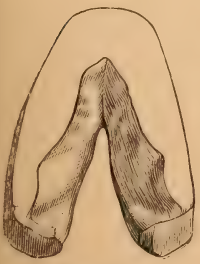

FIG. 2.

The palatal portion of the instrument should fit in the roof of the mouth as perfectly as an artificial denture, and also immediately upon entering between the borders of the cleft in the hard palate. A model that will fulfill these requisites is all that is absolutely necessary, and certainly not very difficult to obtain. See Fig. 2.

The remaining portion of the instrument—the velum—being subjected to the constantly varying positions of the bifurcated velum palati and pharyngeal muscles, is not intended to *fit* these parts even were it possible, but rather is shaped so as to be *adapted* to their use. This can be accomplished only by repeatedly trying the model of the velum in the mouth: and even after completion the possibility of readily changing its shape according to demands that are not at first recognized, is a matter of no little importance.

When the cleft is confined to the soft palate or extends but a short distance into the hard palate an impression of the roof of the mouth and the border of the anterior portion of the fissure will be sufficient, and not more difficult to obtain than an ordinary impression. The palatal portion of the artificial palate may be made to cover the same extent of surface in the roof of the mouth as in other cases, but instead of depending upon the supporting plate to sustain the velum in position, atmospheric pressure can be made to do this work most perfectly; the only advantage in this case of the supporting plate being to prevent the palate from slipping into the throat in an unguarded moment, and also to facilitate its insertion and removal.

In taking the final impression for the supporting plate, I prefer to wait until the velum is completed and ready for the mouth. The plate I invariably make of gold with a narrow tongue supporting the pin, extending a short distance along the under side of the palate, the whole being of minimum size and weight. In taking this impression I have never found it necessary to resort to the unique procedure described by Dr. Swain, *i. e.*, of holding the artificial palate in position with a string passed through the nose. A wire bent to enter the pin-hole of the palate and held with one hand, the plaster can, with no great difficulty, be laid on with a spatula by the other and without danger of changing the correct position of the artificial velum. After the arch has been filled and the plaster hard, it can be finished in the ordinary way of taking impressions, using a tray with a flat bottom.

[*Michigan State Dental Society Transactions to be Continued.*]

THERAPEUTICAL ACTION OF OBTUNDENTS.

BY WILL H. WHITSLAR, D.D.S., M.D., YOUNGSTOWN, O.

[Read before the Northern Ohio Dental Association, May 8, 1888.]

It has been said that if you do not know anything about a certain subject, write a book with that subject for a title. Now whilst I am certain of the impossibility of my being able to write a book, I am equally positive that I am unsuited to the task set before me by your committee assigning to me this subject for a paper. It is then with much misgiving that I attempt to relate my knowledge in this direction, for surely what is unknown to me is vastly superior to what I have learned.

To-day the mechanical procedures of inserting artificial crowns and dentures seem to be the universal topic for discussions in our various societies and journals, but here and there we notice some one who does not forget altogether the treatment of teeth from a medical standpoint. "Immediate root-filling" has also been turned over and over again, and every man finds his level in the method he meets with most success, and this practice continues for years with but very little variation. With obtundents, however, there is constantly being supplied new remedies to be tried. Our treatment of sensitive dentine is largely like empircism. It cannot be specific because there are too many conditions to be met, and our materia medica gives no ideal obtundent, and perhaps, never will. We, however, approach near perfection with cocaine, but its failure in a *few* cases to perform the duty assigned to it is the bar to its being the *ideal* obtundent. Electricity is destined to prove a prominent obtundent. Every dentist finds a few remedies that are by him considered sufficient to have in his case. Experience teaches him what will accomplish the object, if it can be done, and a needless trial of all sorts of obtundents is but an aggravation to the agony of a patient who feels that it is extreme torture to have to sit in a dentist's chair. Nor is it right that such submission be made by the dentist; hence the best remedies are selected. Often the suspense is worse than the real pain and then the best obtundent known is that working through the mind—moral suasion. A kind word of encouragement is a boon to many and fear of pain is subdued and pleasant consequences occur. The power of mind over matter has its limitations, but with the gentle and judicious working with the mind of the patient there is more to be gained than is often imagined. Our study of human nature—the temperaments—here comes into cognizance. As the business men "size up" their customers, we as professional men instantly form conclusions of the temperament of our patients, and, as work progresses, we note carefully the idiosyncrasies that words and actions reveal.

Now all these things assist us in the application of obtundents, and also assist in their therapeutic action, for remedies have more potency sometimes when mind is enlisted in their behalf. But for a general scope let us consider what would be classed as an obtundent, that is, of the material forms. Books do not give any real definite understanding of the term "obtundent" as we would wish. We speak of obtundents for sensitive dentine and those for the soft tissues surrounding the tooth, but the following definition will serve for both:

Obtundents are those medicaments intended to blunt sensation, such as pain, in tissues where surgical operations are to be made, and, obtunding of sensitive dentine is that property by which it may be rendered insensible to mechanical procedures by means of remedies applied externally or administered internally. These obtundents are valuable according to the anæsthetization that the nerve particles succumb to, or the amount of impression made upon the cineritious or gray matter of the ganglion to which the impressions are made.

The term medicament does not always imply a derivative of the three kingdoms, but activity of mind serves oft-times much better than the exhibition of needless drugs. It is of this power we have already spoken, that a cessation of nervous irritability takes place by simply pacifying fears. We leap here into a field where nothing short of a whole treatise on "influence of mind over matter" would suffice to make clear all the correlations admissible in this article. We must not tarry here, however, although not enough stress is given to this subject by most dentists. That obtundents may be administered internally there is no lacking evidence; anodynes, as morphia sulphas hypodermically, the bromides as cerebral sedatives and antispasmodics, heart tonics, and general constitutional treatment are the means employed and rational. Indeed it is intended to associate the different parts of the body in such a manner that stimuli, or other medicines acting differently, applied to one organ may excite the activity of another as of the vascular and nervous properties of a tooth. Thus in a few days treatment an excessively nervous individual may be brought to that condition of mind and body whereby he may be prepared for severe operations he could not otherwise be able to stand. But we have to do with the fifth pair of cranial nerves which is the most acutely sensitive nerve in the whole body. Its irritation causes intense pain. Even when under the influence of ether any severe injury to the large root is almost invariably followed by cries which indicate extreme sensibility of its fibres. If the texture of a nerve receives an injury then pain is produced. The sensation of pain is not a mere exaggeration of ordinary sensitive impressions, but is one of quite a different character, which is superadded to the others or takes their place altogether. In proportion as the contact of a foreign body becomes painful, perceptions of its physical properties are blunted, and the sense of suffering predominates over ordinary sensibility. We must understand the physiology of living parts to enable us to rightly divine the import of therapeusis, when out of the range of normal conditions, tissues need repairing. A good therapeutist must be a good observer. Hence in the application of obtundents we must use discretion.

From the fact that dentine is such a compact and unyielding tissue, and to the naked eye devoid of positive signs, because of this our application of obtundents with each patient, as I have said in the beginning, is largely like empiricism. It is also like empiricism sometimes because locality of residence has a powerful influence. Those in one locality find no use for some remedies that are elsewhere par excellence; experience teaches. Of course we do not rely entirely upon experience alone as did Galen, because we have added to our stock of information the results of chemical investigation, as well as of the experience of those living during the years that have intervened, and hence it is not necessary to go the rounds of all the drugs known to exist, for obtundents.

Arsenic was one of the first obtundents used, it is now the last. Why? Because it destroys. Absorbed by the living den tine, arsenic acts in a noxious manner on the vital properties or texture of the tooth by exciting a violent inflammation which results in destruction. Its action is too slow for immediate use, and not being a self-limiting drug it progresses and the vitality of the pulp itself is lost.

Dr. Ingersoll in his *Dental Science*, says that chloride of zinc is the best obtundent known. It is good in small cavities not approaching the pulp closely. Applied to a thin layer of dentine over the pulp the shock resultant from its powerful corrosive action is too much and death is apt to occur. Its action is caustic and in reaction is acid. The pain that it produces is intense, and on this account cocaine is a superior obtundent for the majority of cases, and has almost superceded the ZnCl.

The Herbst obtundent is the latest and most stable obtundent. It is self-limiting, for the acid it contains is neutralized by the alkalies of the tooth, and hence is a rational obtundent. Cocaine of itself is anæsthetic. It paralyzes the posterior columns of the spinal cord, also the entire system of peripheral sensory nerves. It is the paralyzing of nerve matter that true obtundents should be made to acquire. Cocaine and ether would be a better obtundent but for the reason that the ether evaporates before the cocaine has its full effect.

Carbolic acid, another obtundent is escharotic and anæsthetic. The essential oils act as stimulant and narcotic. Cannabis indica is an anodyne because of its narcotic action. Warmth aids its action. Alcohol is an obtundent depending upon its affinity for water which it abstracts from the protoplasmic contents of the dentinal tubuli. Hot air acts in the same manner as alcohol and is a very valuable way of obtunding sensitive dentine. It is the most rational method of obtunding dentine that exists if it can be made effective. Obtunding of sensitive dentine by purely mechanical means is one of merit and sometimes can be made the first application where it is usually the last. I refer to the use of the sharp bur or excavator. It is no new law that a continued excitation of a nerve brings exhaustion of its nerve energy and loss of sensation is the result.

Now there remains a long list of obtundents that should be considered, and the Robinson remedy of which you all know, is a prominent one, but I have already transgressed upon your patience, and yet we have only glanced at this subject in a general way. That dentine is a living substance has only of recent date been fully confirmed, and hence the true action of drugs upon it has been a question. But now the obscure points are being unfolded to light and the time is not far distant when better knowledge will be found in our literature.

DISCUSSION.

Dr. F. H. Lyder spoke of the Robinson remedy as a radical obtundent having a tendency to destroy the pulp when applied to deep cavities. Carbolic acid is also dangerous if applied too near the pulp. Terchloride-of-gold, dissolved in alcohol is a good obtundent. His method of preparing is as follows: Dissolve the gold in a test tube one-half full of alcohol or ether, add an equal quantity of water, and shake. The solution rises to the top, then pour off and cork tightly. It acts like chloride of zinc although it is not so severe or painful.

Dr. F. S. Whitslar said electricity promises to be a valuable obtundent and is certainly worthy of our consideration. It has done great things in the past and may do wonders for us in the future. It has been said that by saturating the electrodes of a battery with cocaine and applying to the tissues an anæsthetic effect is produced. He spoke of the theory having been advocated that the electricity caused a forward movement of the contents of the capillary tubes so that the cocaine penetrates to a considerable depth. He said, introduce the cocaine into the cavity on a small piece of sponge. As stated in the paper there is a marked difference in the degree of sensitiveness of different teeth. Dr. Lyder said that carbolic acid would destroy the pulp if placed in a cavity where there was near exposure. I remember when Dr. Atkinson and myself applied carbolic acid directly to the pulp and flowed a mixture of carbolic acid and oxide over the surface to save the pulp, and Dr. Corydon Palmer does that to this day. But we have to be governed somewhat by the different cases in hand. I think a great deal of Merke's wood creosote for it is not escharotic. Instead of using the oil of eucalyptus use Sander & Son's extract for it gives better results.

Dr. J. R. Bell: Peppermint oil is good in some cases. Apply the rubber dam, remove the loose decay, then use alcohol and and evaporate with hot air, using the German syringe, encase the tube and carry the point to the tooth. Next apply the oil, let it remain a few minutes then use the hot air again, and the result will be charming in many instances. It is also good as a local anæsthetic or obtundent to apply to the gums, for instance at the cervical border. It is especially adaptable to the deciduous teeth. Menthol and ether solutions are good applicants for the gums after the insertion of large fillings, for they are soothing. Think we should study the patient more than we do, and no operation should be performed during the menstrual period if it can be avoided. Parents should be better instructed about this matter.

Dr. Butler: This subject is an important one. A few days ago I saw the announcement that some German dentist recommended arsenious acid mixed with iodoform to be put into the root and left there. Arsenious acid is sure destruction and should have the go by. Chloride of zinc although it has advocates, is too harsh a remedy. Our friend thinks that carbolic acid is liable to destroy the pulp; it may sometimes but it is generally safe. Creosote is good. Take one drop of creosote to three or four of eucalyptus and it works nicely. Have had a good effect with carbolic acid and peppermint. Hot air is good in connection with obtundents. Pain can be materially lessened by using sharp instruments and burs. Think the remarks of Dr. Bell regarding the menstrual period, are good. We cannot be to careful about it and if we must do anything, do just as little as possible at that time.

Dr. H. F. Harvey thought that alcohol and hot air were the most effectual. He used cocaine successfully and with good effect a short time ago with an atomizer, where nausea was caused without.

Dr. Pancost had visited Dr. Register and examined his apparatus for applying hot air. He said he has a boiler in the basement and pumps the air into it. The receiver is placed back of his cabinet, a tube extends from this to a blow-pipe in the end of which there is a bulb with three diaphrams. The bulb is heated over a flame and the air in passing is heated thoroughly. He said that if one would take a bulb like that and make a small hole in the centre he would obtain the same results.

Dr. F. S. Whitslar said it is true that the Herbst obtundent is self-limiting. Operators should be very careful to remove all tooth substance acted upon or there will be danger of disintegration.

Dr. Buffett: In using any of the obtundents we should exercise judgment in excavating for fear we approach too near the pulp in consequence of no pain being manifested, and thus get severe after effects.

DETRIMENTAL EFFECT ON THE DEVELOPMENT OF THE OSSEOUS SYSTEM OF OUR YOUTH BY THE PRESENT METHOD OF EDUCATION.

BY DR. S. B. DEWEY, CLEVELAND, O.

[Read before the Northern Ohio Dental Association, May 8, 1888.]

It was with many misgivings as to my ability to treat this subject as its importance demands that I accepted this task from your committee, and in casting around for some authority on which to anchor my theories, have found myself at sea without that safety guard. The subject is one which has not attracted the attention of writers to any extent, it only now and then being touched upon in connection with other matters. Lacking these aids I will endeavor to present it as it appears in daily practice. In these days of manual training schools it would appear that the people at large were awakening to the idea that the body should be educated and developed as well as the mind.

Who have better opportunities for observing the detrimental effect of a crammed brain at the expense of the bony and muscular systems than the wide awake dental practitioner? How many of us have heard mothers asking the following question: "Why do my children's teeth decay so young? I never had a tooth filled until 18 or 20 years of age," says she. Let us look at this child of the period whom the anxious mother has brought us. We find a small frame with large head, bright eyes and a highly exalted nervous system. Enquire into the habits of this precocious one. We are told she is ready for the high school although only 12 or 13 years old and still in pinafore and knee dresses. "Stands at the head of her class," says her mother with evident pride. "Don't care for childish sports," in fact is a real book worm. Sits up until eleven or twelve o'clock at night at her lesson. Spends her leisure hours (if such you may call them) at music which excites rather than soothes the nervous system. Her amusements consist of an occasional evening party with a late supper and later hours for retiring. Perhaps after returning from a frolic of this kind a peep must be had at the morrow's lessons before this overstrung and excited being can go to a restless pillow and unrefreshed sleep.

Next let us examine the mouth and teeth of this young Miss. We find the teeth of loose structure; numerous cavities of white decay; very sensitive and covered with deposits; secretions ropy and breath of an ammoniacal odor. Contrast this hot-house plant with her neighbor Miss Tom Boy, who spends every moment she is not under the eyes of her instructor, romping out of doors in pure air and sunshine. Books do not bother her head out of school hours. When school closes she bounds into the house, throws books into a corner with a bang and is off for a good time at anything which promises plenty of activity. She has worked off her surplus vim by eight o'clock, goes to bed tired in body, but mentally as undisturbed as the birds with whom she awakens in the morning rosy cheeked and robust, "over-grown," they say, and no scholar. You know the state of Miss Tom Boy's mouth without the telling on my part.

At the age of twenty the contrast is about as great between our young friends. The crammed child is a wreck in many instances, with not enough bodily strength to put to practical use any of this dearly bought knowledge. Perhaps ready to fill a consumptive's grave, a burden to her parents in their declining years. Such is not always the case, but it is the tendency of many of the better class to cultivate the mind regardless of what becomes of the body, and knowing these facts it is time for us, as a profession, to raise our voices against it.

Among the highly educated classes following the profession it is those who are physically strong that are the most successful and occupy the topmost pinnacle of fame. Then again, it is said that those seeking relief in hospitals and pauper institutions and are burdens upon the community are so by reason of excesses and these excesses are caused by their being physically unable to cope with the world.

Austin Flint says: "The inexorable law of the survival of the fittest applies to man educated or uneducated, as well as to the lower animals, and it seems useless to educate man for work which he is physically unable to perform." We do not claim that this perfect physical development can be obtained in the public school. We must look to the private institutions of learning to bring about these reforms. Here the whole time of the pupils is under the supervision of the instructors. Not only are the hours of study prescribed, but the hours of recreation, relaxation and sleep are regular and under the direction of competent teachers. Regular habits for exercise will develop a body capable of the greatest amount of strain mentally. It should be borne in mind that the child consumes twice as much oxygen and throws off a corresponding amount of carbonic acid as the adult, which is a gauge of its muscular activity, thus showing how important it is for the growing child to have plenty of pure air. Also that it takes more time devoted to physical exercise to develop a growing child than to keep an adult in normal condition. It is quite as easy to produce a brain monstrosity as a muscular one, and an athlete is nothing more or less than a muscular monstrosity, as incapable of mental effort, as is the brain monstrosity of muscular exertion. All muscular exertion is an expenditure of nervous force, therefore, severe mental and physical strain should not be undertaken at the same time. Why should we not force our children to brain activity in tender years? First, because it is then the brain is most rapid in its growth. The most rapid growth of the brain is before seven years of age. Secondly, the child is called upon to assimilate and appropriate enough to nourish its rapidly growing brain and body and at the same time to make good the wear and tear of its active nature. Is it not expecting too much of the digestive apparatus of the child to furnish material for its bodily development and while so doing supply food for an adult brain? Can we expect an overworked and excited child to digest proper food and furnish perfect pabulum on which to feed its starving tissues? The surroundings will not admit of it. A tranquil mind, early hours and undisturbed sleep are as essential as proper food for the child's bodily growth. Perfect digestion is unknown to our hot-house plant. Thirdly, the brain and nervous system being the most vital and vascular require and attract more nutriment, the bone being denser attracts and receives less. This is a physiological fact, therefore, if the demand of the brain for perfect pabulum is greater than the supply the bony structure must be the sufferer. It has been noticed in the overworked pupils of the Paris public schools that the teeth become deteriorated in a few weeks after entry.

Any mental strain shows itself upon the teeth by increased decay as well as increased sensibility of the dentine. Overwork of any more vascular part will give like results upon the teeth, such as over-trained muscles for athletic trials.

The last reason why we should not force our youth to undue brain activity is the inability of the system to assimilate and appropriate the requisite amount of phosphorus for the building up of both brain and bone. Phosphorus appears to be the vital principal of both structures. The amount contained in each is nearly equal. We are aware that nothing produces such good results in reproduction of bone as small doses of phosphorus. It must be carefully given lest its effect become poisonous instead of beneficial, because the system can assimilate but small quantities in a given time. Now if the brain must have phosphorus and the bodily appropriation is small, and we create in the brain by undue stimulation a demand as great or nearly so as the supply, the bones must suffer in consequence, hence plenty of brain tissue and a dwarfed physical structure.

DISCUSSION.

Dr. Buffett: Nine times out of ten if you inquire into the habits of children, you will find that it is home dissipation more than school requirements that has injured the health. Both society and school at a time is too much. Yet I think the real cause is back of the paper. We find more trouble in the mothers who have been society women and are not strong. How can we expect healthy and strong children from this source? Look at the difference between the Germans and Americans in this respect. We cannot well have healthy mothers dressing as they do now. Again there is too much excitement in our cities for children to have the best of health.

Dr. F. S. Whitslar: The difficulty is that we do not take the proper care of our house. The house that we live in. The body. Think Dr. Buffett struck the key note when he said that mothers wanted their children to be educated rather than learned. For twenty years I took account of the sixth year molar, taking observations among two classes, the better livers and the poorer livers. In the first there were nine out of ten that had diseased molars. Of the second class, those who lived on beans, potatoes, corn bread, milk, etc., three out of five were found with the molar teeth sound. I concluded from these observations that diet had considerable to do with the character of the teeth. Another thing is certain that irregularities are more frequent with children advanced in civilization than among the Germans or the well developed poorer classes.

Dr. J. R. Owens: The cause of poor tooth structure is a complicated affair. The vitality is not now as great as in former years, yet this is not the only cause for the loss of the teeth. No doubt the physicians ought to give account for many teeth that have been destroyed. If the mother while pregnant has trouble with her teeth why may it not affect the child in the same way that birth marks are caused?

Dr. Wilson: Many cases are due to the peculiarities of the race. He spoke of the teeth of foreigners and said that he had seen mostly those of the German and Irish. The German's teeth are generally good, but those of the Irish, I think as a rule, have poor material in them.

Dr. Butler: Many claim that they never had trouble with their teeth until they came to America, but they do and have a good many other troubles too. There is much to be done for them in their own country. The false notion of young girls to become young ladies is deteriorating in its effects. A change should be made. Habits of dress are often detrimental. The diet has much to do with the tooth organization.

Dr. Harvey: Many combined influences tend towards the decay of the teeth. Hereditary influences I think are the greatest factors. The education system is worthy of our serious consideration.

Dr. Bell: While we cannot make laws we can use our influence to a certain extent. One thing that I have opposed is having nut and fruit stands so near the school buildings. Children ought to stop gum chewing. It is a bad habit and injurious and we ought to throw out a word of warning wherever we can. We should make our thoughts known to others and criticise freely for it is only through criticism that wrong is made right.

Dr. Dewey: Dr. Buffett said we could not have healthy children from unhealthy parents. The mother is now beyond our reach and we must begin with the children. We must develop healthy children for them to become healthy mothers. About the demands of society being greater on the young people than education is true, but the parent thinks this of quite as much importance to the child as school life. More can be done in this matter in private than in public schools.

HOW SHOULD DENTAL SOCIETIES BE CONDUCTED?

BY L. P. BETHEL, D.D.S., TOLEDO, O.

[Read before the Northern Ohio Dental Society, May 8, 1888.]

This question has been brought to mind through observation at various society meetings.

Judging from the variety of ways in which societies in general are conducted, there seems to be a great difference of opinion in this matter. Perhaps in one, more time is occupied each year in revising and discussing the constitution, by-laws, or minor points of parliamentary ruling, than in the actual, beneficial work of the society. In another there seems to be no order, and even the president himself is not sufficiently posted on the standard rules of order. In consequence everything goes slow and at least one-third of the time is wasted.

At another the papers are taken up miscellaneously, and perhaps three or four read before any discussion is allowed.

Some societies have no clinics.

In others some of the officers and committees are so negligent that but little preparation is made before the time of meeting, which brings confusion and dissatisfaction.

These are but a few of the many points that could be brought up in regard to the manner in which dental societies are often conducted.

How should they be conducted? Let us first ascertain the object of these societies. We assume that it is to promote the interests of the science and art of dentistry and to cultivate good fellowship among the members of the profession. That the results of experience, discoveries, and inventions may be for the common good and mutual benefit of all. To accomplish this end, a society should be made attractive in some way to induce dentists to attend, for instance, by having good clinics in connection with the regular transactions.

Since clinics have been more thoroughly introduced into our societies, men who before could not have been induced to attend a meeting have been attracted and expressed themselves as feeling amply paid, for attending, by these alone. A certain dentist made this remark to the writer in regard to clinics: "Now this is what we need; to see the actual work. One practical demonstration is better than a dozen descriptions, for it is so much more impressive. It is the practical more than the theoretical that the majority of dentists appreciate in these days."

It seems to be a fact that there are comparatively few who attend the minor societies that prefer the theoretical. An admixture may be well, yet, it seems proper that the District and City societies should be made as practical as possible. The State societies may rightly have an admixture, and the American be made the place for the presenting of these and also papers regarding scientific research and new theories that pertain to matters not of direct practical importance.

Another point is the misuse of valuable time. It is noticeable in nearly all societies that much time time is taken up in wrangling over unimportant matters or bringing up points in the discussions that have no direct bearing upon the subject under consideration. These useless debates are tiresome to the majority of dentists present, and detract much from the interest of the meeting.

In the elections there should be no strife for office. All business of the society should be disposed of with as little ado as possible. That this may be done, it would be well for all to post themselves on parliamentary usages that misunderstandings may not arise and hinder proceedings.

The society should make sure of enough material in the way of papers, clinics, etc., to make the meeting attractive, interesting, and profitable. If the regular appointed committees cannot attend to it all, let there be sub-committees supplied and a portion allotted to them.

Let the work be entered into more combinedly and fraternally.

Let each member go to the meeting, not with the intention of domineering, but with the feeling that he is there to learn as well as to teach. Remember that others have as good a right to their opinions as you have to yours; for after all they may be right and you wrong.

There should be more hospitality expressed at society meetings. Take the strangers and timid members by the hand, welcome them into the ranks, and show them that you are glad to see them there.

Encourage the young men in the profession; the young graduates. Make an exertion to get their attendance at the meetings, then put them into the harness and get them interested in society work. There is a deplorable lack of hospitality in societies in general. Of the eight or ten attended by the writer within the past year, in five different States, but one (a State society) showed this hospitality to any appreciable degree.

Our Northern Ohio Society, while not so large in numbers as some, is doing a good work especially in making its meetings practical and making a special effort to start the young men aright. If all societies would make a corresponding effort, I believe that within a few years we would have hundreds of more good, active members in our organizations and much less charlatanism now so common everywhere.

The aim should be to enlighten one another and elevate the profession.

DISCUSSION.

Dr. Butler: I can say that the points referred to in the paper are worthy of our serious consideration. That much valuable time is squandered is a fact. Perhaps no man here has been in attendance upon more societies than myself. Since '58 or '59 have been in attendance upon a society meeting every year, and should think it a great loss to be deprived of some such means of enlightenment. I think that there are many who attend for the purpose of learning and not domineering. We can truthfully say that this society has been very fraternal since its existence. On the whole I think that there is as good harmony exhibited here as in any other society and the character of the work makes as good a showing, but I think there could be some improvements made yet. Believe the local societies are the places for the practical and the higher societies for scientific as well. A variety is an advantage.

There is one feature of the section plan in the American Society that has not been well managed; it is that of having a chairman who does not voice the entire section, but receives all the credit. Everything is strained through him. The views of the different members should be embodied in the report.

All the members here should bring something to add to the interest of the meeting. To have a variety to interest all is what we need, so that something will be within reach of every member. About clinics I regard them of very great value. We should remember that because things are all well understood by us is no true indication that all young men understand them. It was different thirty years ago. The difficulties of seeing operations then were great. The young men do not realize the advantages of to-day.

If we can do anything at the meetings that is instructive we should do so, for it is of as much importance as the best prepared paper or discussion; and if clinics were properly conducted we would have the best demonstrations ever seen. They should be well prepared and made mention of in the proceedings.

Dr. Bell: I am glad that the point of clinics was brought out in the paper. The points that I gained at the International Convention more than paid me for the expense of going.

Dr. W. H. Whitslar: One feature that makes our society a success is that we have an Executive Committee to require persons to write and consequently get some papers that otherwise we would not. If the members of the American Association were required to write instead of being solicited, I think that more good would be accomplished. For instance, being Secretary of a section I wrote about thirty letters and received only six replies and in most of these was put forth some excuse to not write, and it is through this cause that the work at last falls upon the Chairman to prepare the whole or almost the whole of the report himself. The Chairman should not be censured for he has a trying position to fill.

ILLINOIS STATE DENTAL SOCIETY.

[Reported for the Ohio Journal of Dental Science by "Mrs. M. W. J."]

(*Continued from page* 332.)

At the afternoon session suitable resolutions on the death of Dr. Geo. O. Howard, of Waukegan, Ill., were unanimously adopted.

A telegram of greeting was sent to the New York State Dental Society, in session at Albany.

Eight members were elected to active membership, and the following eminent foreign members of the profession were elected to corresponding membership: Drs. Geo. Cunningham, London; Grevers, Holland; Van Martyr, Rome; Le Vette, and Magitot, France; Sylvestre, Berlin; and C. L. Tomes and Joseph Walker, London.

Dr. J. J. R. Patrick, Belleville, then read a paper entitled

DENTAL MORPHOLOGY AND THE ETIOLOGY OF IRREGULARITIES.

The beginning of all life, whether animal or vegetable, is found in the simple cell. From the coalescence, or amalgamation of the paternal and maternal elements, there arises a new organization, in which is combined the heritage from both. From the parent cell develops the germ, the embryo, the fœtus, the child, the adult. When the paternal and maternal elements have united the nucleus of the maternal cell disappears and another appears in the centre, which by segmentation becomes two; these in turn segment until we have the two classes of granular nucleated cells, the epiblasts and the hypnoblasts, the mesoblasts not appearing at first. But for our knowledge of the mature animal what we know of embryology would be mere abstractions; from the embryo we could never tell what the parent was.

In the development of the tooth much is still obscure. The development of the hog compares in months with that of the child in years; hence we can study one from the other, and our most tangible results are obtained from the study of the molars, the incisors developing too early in fœtal life, when the tissues are too delicate for manipulation. At the saccular stage of the tooth, we find an elongated puffy ridge with a bulbous terminating tuberosity constituting the superior maxillary. The sac of each future tooth is connected with the gum by a funicle or elongation of the sac,—an irritable umbilicus, of which the sac is the placenta; it is connected with the parent and presents the same phenomena for nourishment. As the future tooth progresses in development the funicle becomes detached, a mutual interchange of circulation is accomplished, the plates of the alveolus part and allow the enamel crown to emerge. There is *no absorption;* not a particle; it is a word which satisfies everybody and explains nothing. As the crown emerges, the sac slips back to the neck and there remains. As the root approaches completion the sac rounds over the ends and becomes the formative membrane of enamel and cementum, through which nutrient vessels penetrate and nourish the interior. When first formed it is a globular capsule, void of cancellated bone structure, which afterwards fills even the bifurcations of the roots. The bone substance forms and thickens around the tooth as the tooth itself grows and forms.

In *cominutional anatomy* there are branches of nerves to each root of every tooth, and nice little holes in the bone through which they pass, but they are not always there in reality. Like supernumerary teeth, they may be supplied by the surrounding tissues and have no connection with the dental nerve, and yet develop dentine and enamel. The deciduous teeth are supplied by deciduous vessels and surrounded by deciduous bone, and exuviated when useless. The development of a tooth may be interrupted, or arrested at some point, from insufficient nutrition. Dr. Patrick described, and showed an illustration of a tooth which he had extracted because loose and decayed, though not painful. The development of the tooth had been arrested while still retaining almost its primitive saccular form. It had no connection except with the surrounding soft tissues, and was a mere hollow, spherical body of cementum and enamel, entirely destitute of dentine. He had never seen a supernumerary tooth developed in the lower jaw.

Dr. E. H. Angle, Minneapolis, who was appointed to open the discussion of this paper, not being present, Dr. G. V. Black took his place. He said he regretted his position having made no preparation to discuss a subject so intricate, and because he had to disagree with Dr. Patrick on many points which they had not looked at from the same standpoint.

He wished to bear Dr. Patrick out in the statement that teeth might be developed without any connection with the nervous system. In some known cases of malformation, children had developed to full term without any trace of nervous system whatever; the tooth germs were nerveless, though otherwise perfect. It was possible that some teeth might develop nerveless, though we would generally find them sensitive.

In the saccular form of the tooth the "umbilicus"—epithelial cord—would not be found so pronounced as in Dr. Patrick's illustrations. Neither had he seen vessels in that cord, though when it breaks up, vessels are found in the neighborhood. In the formative stage a little tongue of epithelium dips down in a groove of fœtal tissue, from which a bud of epithelial cells grows downward and enlarges. The enamel organ is derived from the epiblast—the skin of the tooth; the body from the mesoblast; the formation of dentine begins before there is any cementum, though the cementum laps on the enamel sometimes. As the tooth develops, the enamel organ *disappears*—the word is not essential, but it *is absorbed;* removed by a process of solution; cells grow in against it and cause it to dissolve, as the roots of temporary teeth get away, by absorption. As the tooth develops the bone opens—not by throwing apart plates, but by absorbing—the bone disappears like footsteps in the snow. The permanent teeth are often entirely covered in by bone, but it will be absorbed in due time, by organs brought into existence for that very purpose, which, when no longer wanted, are thrown away like the frog's tail. If Nasmyth's membrane remained on the root of the tooth and formed the cementum, it would be the cementoblasts, a very different thing. As the crown is developed the enamel organ drops down on the cusps of the teeth; from impacted teeth it will disappear entirely, leaving the enamel in direct contact with the tissues, causing great irritation; this is also the cause of the irritation in the eruption of belated teeth. He has never found a tooth destitute of dentine. He has seen supernumeraries from the lower jaw, but they are rare; had one case with five lower incisors, and another with four lower molars on each side.

Dr. Carroll asked if Dr. Black looked upon supernumerary teeth as mere accidents or abnormalities, or whether it might indicate a tendency to return to a prehistoric type.

Dr. Black considered them mere vagaries.

Dr. ——— inquired why it was that supernumeraries were never developed in the first dentition.

Dr. Black replied that that was not a fact; though rare he had seen cases—in a recent case there was an extra lateral incisor in a child of four years, and it was attached to the root of the normal lateral.

Dr. Patrick closed the discussion maintaining the positions taken in the paper read.

After the appointment of several committees, adjourned to 8 p. m.

At the night session, Wednesday, Dr. C. C. Carroll delivered a clinical lecture on Aluminum Casting (substantially as recorded in this Journal, page 215, May issue). The subject was passed without discussion.

Dr. L. Ottofy, Chicago, read a paper entitled

OPERATIVE DENTISTRY.

He said that the scope of the subject assigned him was so extensive that only a partial review would be possible. He would prefer, to very large gold contour fillings in the anterior teeth, porcelain settings, or crowns. Crowns for the inferior teeth should be as simple as possible. He looked upon the Logan crown as the best substitute. It should be selected with care, as to size, so as to necessitate as little grinding as possible; the root should always be encircled with a gold band, fitting snugly, and cemented with oxyphosphate. The all gold crown best for posterior teeth is unsightly for the anterior; Dr. Patrick's crowns are admirable. Where articulating with the natural teeth much care is necessary. He had found nothing new as to the use of gold in filling since the last meeting. The combination of cohesive and non-cohesive is very valuable. Small cavities should be filled with non-cohesive gold and hand pressure. The use of tin and gold combined has been pushed beyond its legitimate place, though it is the best thing that can be used in many places; it should be finished with smooth flat burnishers. It has the great disadvantage of discoloration, due to thermal changes followed by galvanic action through moisture. In many cases where tin and gold is used he would prefer copper amalgam. Operations with amalgam should be made with the same care as gold, and finished at a subsequent sitting. Approximal surfaces should be contoured. If particles of amalgam are left in the mouth, they are liable to become attached to the fresh filling and spoil the finish. Copper amalgam can be used in cavities where it is impossible to exclude all moisture. For temporary purposes gutta-percha and oxyphosphate retain their utility. The latter is unequalled as a basis for large fillings in molars, with an amalgam surface. In the treatment of pulpless teeth, with alveolar abscess, there is often great lack of discrimination as to the propriety of immediate root filling. It will not do every time. Potent drugs which destroy the tissues should be avoided. The effort should be to save all teeth which give reasonable hope of salvation; nerves should be capped with incorruptible, pliable substances such as chlora-percha and oxyphosphate. If there is an abscess, puncture and use iodoform. Matrices, separators, and other appliances designed to save time and trouble should be used with discrimination.

Dr. J. W. Wassall, Chicago, who was appointed to open the discussion, said that through the vastness of the subject, much had necessarily been omitted by the essayist. The tendency now is to reduce the time of operations; he thought a warning was needed, not to push this too far. It was often difficult to decide whether to crown or to fill. As a rule he would prefer a large contour operation for a young person, even if it lasted only five years; the time for the crown would come soon enough. He prefers to the Logan crown, which he has not used, a plate tooth with gold backing and dowel. Bridge-work affords a great field for usefulness. In fillings, as a rule, soft gold should be used at cervical margins, finished with cohesive gold. No one can doubt the utility of the combination of tin and gold. He is very much pleased with Hood & Reynolds' cylinders, which act like the Wolrab gold, and can be packed down dense and firm. Copper amalgam, the latest hobby, has its practical value, especially on the buccal surface of molars running down under the gum, there its moral effect is good. The cements should be burnished down after the rubber dam is taken off till they have a glossy vitreous surface. They should be given an hour to set before the rubber dam is removed. He condemns immediate root filling where there is a deep seated abscess; caries may result from careless proceeding in these cases. If there is no sensitiveness when the broach is passed through the apex, we know there is a cavity beyond which must be cured. In the formative stage of the tooth it is very important to save the pulp alive, until calcification of the dentine is complete. There are some dangers from the use of matrices and separators which should be guarded against. He commends Dr. McKellops' idea of folds of waxed tape in separating.

Dr. ——— said we sometimes find, in the work of other operators, that in drilling for the root canal, the drill has passed through the side of the tooth, causing great irritation, gutta-percha forms a very compatible filling in such cases; also as a capping for nearly exposed pulps. He thought it a mistake to burnish cement fillings, as we thereby disturb the crystallization.

Dr. Crouse spoke of the treatment, not of the teeth, but of our patients, especially new patients. It is necessary to study their temperament and habits, to ascertain the cause of failures of past operations and the probabilities of our own success. Study also their pocket books. If on a second visit we find that our advice has not been followed, our best work will be thrown away from lack of proper care. He has used Perry's separators, but considers Parr's superior to anything he has seen. He prefers the old-fashioned soft gold cylinders, rolled on a broach, making them up by the quantity of different lengths and sizes; cohesive gold can be added on for contouring. Uses Kearsing's No. 10 preferably to all others. For recording his operations, he has a pad of numbered diagrams, on which he records the name and address of the patient, indicating all the operations required, as found at the first examination. His attendant marks them as each operation is completed, to which he affixes the charge, and this constitutes his day book.

(To be continued.)

Editor's Specials.

"Write the Vision and make it plain."

REMARKS ON REMEDIAL ACTION.

[Read before the Greene County Medical Society.]

The teachings of Nature are not fully understood. The human constitution and the laws of health are clouded to human view. Recognizing the infinite power, wisdom and goodness of the great Creator of all, we may infer that no material substance, organic or inorganic, has been made in vain; and also, that every force, whatever its correlations, possesses not only power, but usefulness. But these materials and forces, so far as we can make them available in maintaining, restoring, and promoting human health, are the instrumentalities of the science of medicine —the *tools* of the physician. Hence there is room for but one system of medicine.

In the departments of physics each artist is supposed to understand his tools, and the character and details of the machinery on which he works. But individuals of the same handicraft differ in degree as to this understanding. The human mind is capable of going extensively and minutely into details, but a limit is reached in each individual case. It was once told that 116,000 specimens of patented articles were deposited in the patent office at Washington, and that one aged clerk in the department knew the location and intended use of each. He was revered as a patriarchal miracle; but his attainment was far short of the number of materials, inert, medicinal and poisonous, with which medical science is concerned. This vastness of the field and our own consciousness render it axiomatic that the unknown greatly exceeds the known.

The mind being an emanation from the infinite and longing to return to it, is not content with the narrow limits of the known, but breaks over into the great unknown and shouts back the first impressions of its new observations with the zeal of a beginner, and hence much is promulgated as science which is not knowledge; surmises are set forth as demonstrated truths, and opinions are called facts. But these pioneer efforts have their advantage, for science progresses from the known to the unknown; yet we must never forget that science is not, even in part, made up of things guessed at.

Although great progress has been made in medicine, yet who of us can rest content with present attainments? And while as yet we must use many remedies empirically or fail in duty, we are spurred forward to new researches, and fresh discoveries, by the conscious satisfaction we enjoy in using, when needed, those remedial agents whose actions we understand, as compared with the use of those otherwise employed. The term empirically is not used here in its offensive sense.

In reference to some of these uncertainties in medicine, Dr. Mariano Semmola said, at the late International Medical Congress, as published in the *Medical Record*, "If a man supposes a fact instead of demonstrating it, the phenomena of Nature are not reproduced. When he resorts to hypothesis, the power of man disappears. If Nature's laws are not respected, the telephone does not work, the electric light does not flash, the steam engine stops. The physician, then, is the only one who pretends to become the master of Nature without knowing her laws."

Facts are facts, even though not always pleasant in their stubbornness.

Some of us long ago read and heard that medicines act specifically, chemically, or dynamically.

Dunglison long ago doubted that any medicine is specific. Sulphur for itch, and mercury for syphilis, he said, were often mentioned as specifics, but he was not willing to so class them. And we presume nobody regards them as such now.

Long ago when any one claimed that a medicine acts dynamically, we tried to find out his meaning, but in every instance failed, and were much relieved when Liebig afterward said the "specific," and "dynamic" actions of medicines were terms invented for the concealment or ignorance.

When we consider that the human body is made of matter, and that all its materials are arranged and combined in accordance with the laws of chemical force, as modified by vitality, cohesion, gravitation, etc., are we not warranted to believe that, in "the good time coming," when the light of science shall be brighter and better concentrated, many remedies will be regarded as acting chemically which are now administered without a thought as to how or why they cure?

It is probable that we all agree that the actions of the so-called "chemical remedies" are more clearly understood than are the actions of those not so regarded. Perhaps a consideration of individual specimens might make this thought clearer:

The familiar escharotic, nitrate of silver, may illustrate. In the laboratory it forms a definite chemical compound with albumen, or fibrin, a compound as uniform and definite as are carbonic acid and water. This compound is whitish, and but slightly soluble; and the affinity of albumen for the nitrate is strong enough to overcome the vitality of ordinary tissues. We cannot doubt that the act is the same in the body and in the laboratory. Any apparent difference is readily explained by a consideration of attendant circumstances. Sudden destruction of vitality in a portion of tissue disturbs adjoining tissue. Irritation results, a thitherward flow takes place; swelling and consequent pressure, and, therefore, pain follow. These are not chemical phenomena, yet occur because a portion of *living* tissue has been invaded by chemical action. Another phenomenon is observable, also, and that is the speedy blackening of the tissue acted on.

This is easily explained. Nitric acid has an affinity for organic tissue as well as for oxide of silver. A divide is forced. A portion of the acid lets go a portion of the oxide, which is deposited and displays its own color, black, on the surface attacked.

But recognizing the action of this salt as chemical, some fail to make profitable use of their knowledge, by relying on it as a styptic. This mistake is not so common since the general use of persalts of iron. The older authorities, down to Pereira, if not later, credit it with styptic properties, and, like the sheep that jumped into the sea, because their blind bellwether fell over the cliffs, we are too apt to follow our leaders. True, the nitrate forms a coagulum with the albumen of the blood, but this is soluble in an excess of albumen. The flow may be arrested for a time, but the pressing current from the open vessel dissolves its way through, endangering the patient, and disappointing the physician.

The chemical action of a true styptic, though similar in nature, is radically different in its results. Take tannic acid (or tannin) as an illustration. It, too, forms definite compounds with albuminous tissues. The result of its union with albumen is very dense and firm in texture, but not very bulky ; and it is not soluble in blood, nor in any constituent of it. If not the best local styptic known it is only because, from the thinness of the coagulum formed, it is liable to be torn by the pressure, or by accident. When its coagulum can be supported by moderate external pressure, tannic acid is the most reliable styptic known.

Do any administer iron to pallid school girls, and watch their lips bloom into rose buds and kisses, and their cheeks redden and glow with blushes of loveliness, and not recognize they have used a chemical remedy ? As well may they deny that the function of respiration is a great and grand chemical process with phenomena numerous enough and deep enough for the study of a life time.

It is not necessary here to take into consideration the matter of poisons and antidotes, yet there is a sense in which all remedies are antidotal. But it may be well to notice some agents more complex in their actions than any yet named, which seem to act chemically, although not always, if generally, classed as chemical remedies.

Iodide of potassium has been called an alterative, but if thus truly classified, the question still remains, how does it alter? And this may be answered all the easier if we bear in mind that disease is a step toward death, and therefore morbid and morbific tissues have less vitality than those which are normal, hence they are more readily taken into combination by chemical agents having affinity for them.

Potassium iodide is highly soluble, and its solution is so attenuated, or, if you prefer, its molecules are so small, that it readily and easily passes into the general circulation, going wherever the blood goes, and even where red blood cannot go. It is hoped you will not be surprised at the statement that the iodide is nearly, if not entirely inert. While its elements remain combined, an additional salt floats in the blood, and the water of its solution may, for a time dilute the same, but we cannot believe that its remedial influences are thus explained.

When it is borne in mind that iodine and potassium are ranged on the same end of the electric scale, it will be remembered that they are held together by a feeble affinity. In their joint travels through the system, each meets with affinities stronger than the one binding them, and they separate by mutual consent, and the result is that there are pure iodine and pure potassium minutely distributed throughout the entire system. So great is the affinity of potassium for oxygen that it burns under cold water, or even snow or ice, and kindles into flame the escaping hydrogen. It follows that being in such minute subdivision as it is on letting go the iodine, with its affinities energized by its nascent condition, it must be almost instantly converted, by oxidation, into potassa. But no one can believe that caustic potash and iodine, each in its nascent state, can be thus distributed throughout the system, and not exert chemical action in the direction of their affinities. And thus we have explained the common classification of this iodide as an irritant. Bring it in contact with living tissue, and almost instantly its decomposition begins. The potassium demands oxygen, and will take that element from organized tissue, if not more readily obtained. But doing this it irritates—even kills; and in getting its supply, it becomes caustic potash, whose powers in this line are above disputation. And as potash forms soluble compounds with organic matter in general, we can understand why this iodide has been classed as a liquefacient or resolvent. It dissolves any tissue of the body, dead or living, including the combinations of iodine, nitrate of silver, etc.

If an effort were made to distribute singly either component of this salt throughout the system, we must see it would result in failure, as its force would be spent in local action, hence the important thing about this medicine is that its constituents hold each other comparatively neutral while united, and even though its decomposition is rapid, a portion of its solution reaches the most distant parts before the separation of its elements. In this way we have iodine and potassa, two of the most active reagents known to chemistry, placed where they can do the most good.

If it be true that the activity of this remedial agent is due to the readiness of its decomposition, and the affinities of its components after separation, we can scarcely fail to notice how admirably they act in concert. Iodine usually forms more or less insoluble precipitates with organic tissues. And thus may many morbid and morbific materials be arrested in their careers of mischief; but in such physical condition the emunctories cannot eradicate them from the system, as the liquid state is required for this, and fortunately the potash is right there insuring the liquefaction wanted.

Close thinking is called for in considering complicated chemical actions like these. We must not regard them as we would a series of mechanical manipulations. One boy may get the kindling, another place it in the grate, a third lay on the coal, and a fourth apply the match, and a grateful fire may result. But here oxygen siezes potassium, making potash, iodine unites with tissue causing a precipitate, potash siezes and dissolves this, and similar foreign or morbid materials, making them subject to emunctory processes, and all these are coördinate actions, related to each other about as the entrance of light is to the opening of the door.

Now let us think of a patient in whom, as the prophet says, "from the sole of the foot even unto the head there is no soundness,"—tertiary syphilis may answer our purpose,—and if we use this medicine judiciously, very great changes must occur, for verily it is an *alterative*, and can we not now answer the question as to how it alters?

A similar process of reasoning will illustrate the action of the alkaline hypochlorites, whether used locally or constitutionally. For sake of definiteness let our thoughts be now confined to the hypochlorite of soda, the "Liquor Sodæ Chlorinatæ" of the shops. Its commercial name, chloride of soda, is a misnomer. Chlorine does not combine with basic oxides, and this salt is formed by the combination of hypochlorous acid and the oxide of sodium, which is an alkaline base. Oxygen is the most highly electro-negative element known, and chlorine ranks closely beside it. So much alike are they, in this respect, that they unite with difficulty to form hypochlorous acid; and when uncombined, the acid is decomposed by the elasticity of its component elements. They resume their gaseous states.

It would waste time to describe remedial action of soda, but its principal value in this connection is found in the fact that it holds together the elements of the acid till it can be placed where needed, externally or in the general circulation.

Many acids will take the soda from the hypochlorous, or at least claim a divide. This virtually liberates both oxygen and chlorine, and these, in their nascent state, suggest the great chemical powers of this medicinal agent, with the active affinities of soda to be added to them. Nothing is more likely to take the soda than carbonic acid; and this it will do whenever the hypochlorite is in contact with soluble carbonates, or with the free acid.

In speaking of this salt, Pereira says, "In *moderate or small doses*, it has been denominated stimulant, tonic, astringent, antiseptic, and febrifuge. But these terms give no real explanation of the nature of those organic changes produced by it, whereby we obtain such benefit from its employment in various diseases."

If language were given for concealing thought, terms better than the above could not be invented. But give us nascent oxygen, chlorine, and caustic soda minutely distributed through the circulation, can we suggest any mode of penetrating chemical action? And will not the various affinities and results explain all we can gain from this remedy?

It is not the purpose here to set forth the therapeutic properties and medicinal uses of the individual remedies named. The design of this paper and your time forbid any thing of the kind. They are used simply as illustrations, and the aim has been to encourage close thought and clear conception in reference to the modes of action of remedial agents. And it will not require great attainments along these lines to render us discontent with such terms as specific, dynamic, resolvent, and kindred expressions, if used in relation to the action of medicines.

Forgetting those things which are behind, and reaching forth toward those which are before, may we press toward the mark for the prize of clearer thoughts and higher attainments in reference to the nature of remedial actions.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 513 Jefferson St., Toledo, O.]

TRIFACIAL NEURALGIA.—Cannabis indica is a favorite remedy in trifacial neuralgia, and given in drop doses at intervals of five minutes, the pain will shortly disappear.—*Med. Brief.*

COCAINE IN MINOR SURGERY.—DR. JACKSON says the preliminary washing of the parts with soap and water before using cocaine should be avoided, as the alkali of the soap prevents anæsthesia.

ESCHAROTIC.—BARTHOLOW says that dried sulphate of zinc, made into a paste by the addition of a little starch and water, is a valuable escharotic, and free from the danger that attends many escharotices.

SOLUTIONS OF CORROSIVE SUBLIMATE.—A neat and convenient way to handle corrosive sublimate for making antiseptic solutions is to dissolve three grains in one fluid drachm of alcohol, which, added to a pint of Listerine, makes 1-2000 and *undergoes no chemical change.*

TO IMPROVE SYRINGE PISTONS.—DR. V. E. WARD writes: Place a piece of chamois skin between the two leather washers on the piston of a hypodermic syringe, cutting a trifle larger, and the syringe will always work well for the chamois swells immediately upon contact with water and fills the barrel.

TO RETAIN THE RUBBER-DAM IN PLACE.—Anon writes: To keep rubber-dam in place after applying it, dry the teeth and dam with napkin or bibulous paper, then with a camel's hair brush dust the teeth and rubber with pulverized resin. This in most cases will keep the dam in place without the use of other means.

Cocaine.—Chloroform and ether are both antagonistic to cocaine, and the inhalation of either will allay the convulsions due to a poisonous dose of the latter. On the other hand, cocaine may be used as an antidote in cases of poisoning by narcotic agents, especially such as cause great depression of the respiratory and cardiac centers.

Chloroform.—Dr. Chisolm has administered chloroform, he estimates, to ten thousand patients, without a fatal accident. If the heart's action stops, as it occasionally will, he simply "suspends" the patient, head downwards, and believes that this will always restore them to life. He insists that no time should be wasted in other measures.

Bleaching of Pulpless Teeth.—It may not be generally known that peroxide of hydrogen is the great bleaching liquid that barbers have been using for several years to produce blond and white heads. Sometime ago this led us to try it in bleaching teeth, and we are ready to say that it far exceeds our expectations and does more than anything we have ever tried. Along with this its disinfectant properties make it doubly valuable.—F. T. Clark in *Items.*

Lining Cavities.—Dr. I. C. Curtis says: I find by varnishing the walls of cavities (especially if they are near the cervical margin) with a very thin solution of chloro-percha and not allowing it to extend to the orifice of the cavity except at the cervical border, adds much to the durability of approximal fillings in bicuspids and molars, where, unless we have self-cleansing space, decay is sure to recur if filled with any of the metal fillings.—*Odont. Journal.*

Deodorants for Iodoform.—Oil of turpentine has been recommended as a very efficient deodorant for the hands or for utensils, after they have come in contact with iodoform. They are first thoroughly rubbed with oil of turpentine, and, after about half a minute, washed with soap or soap spirit. It is also asserted that a watery solution of tannic acid, which leaves no odor of its own, destroys that of iodoform immediately, and can be washed off at once.—*Register.*

KREOLIN.—After experimenting, GAWALOWSKI says: I am willing to risk my reputation on the statement that kreolin, the much bepuffed antiseptic, is a coal-tar product, but with the addition of a resin soap and a fat soap (nature not yet exactly determined) and caustic soda. In other words, it is a composite mixture of carbolate of sodium, liquor potassæ et sodæ creosotatus, a resin soap (very probably guaiac soap) and a fatty soap, into which the coal-tar products have been incorporated in quantity sufficient to give the whole the well-known qualities of the same.—*Pac. Record.*

STILL A NEW ANÆSTHETIC.—DR. PLIOUCHKINE recommends canadol, a hydrocarburet distilled from American naphtha, as a local anæsthetic. It is a transparent liquid, very volatile and smelling like benzine; it is insoluble in water and in alcohol, which renders it superior to ether. It causes rapid cold in the first minute, like ether, but does not, like this substance, continue to lower the temperature in the ensuing minutes. The anæsthesia produced by canadol is complete in sixty seconds, and employed as an anæsthetic in cases of minor operations completely subdues all pain.—*Brit. Med. Jour.*

A GLASS FOR THE MICROSCOPE LENS.—Common glass contains only six substances, but a glass now made in Sweden consists of fourteen, the most important elements being phosphorus and boron, which are not found in any other glass. The revolution which this new refractor is destined to make is almost inconceivable, if it is true, as is positively alleged, that while the highest power of an old-fashioned microscopic lens reveals only the one four hundred-thousandth part of an inch, this new glass will enable us to distinguish one two hundred-and-four-million-seven-hundred-thousandth part of an inch.—*Pac. Record.*

INFLUENCE OF THE TEMPERATURE OF THE BODY UPON THE CONVULSANT ACTION OF COCAINE.—It has been discovered by these physiologists that cocaine in equal doses produces convulsions which are more intense as the animal is subjected to a higher temperature.

Drs. Langlois and Richet experimented on lower animals with the following results: If a dog in a bath at 104°–106° be given gr. $\frac{1}{8}$ of cocaine convulsions ensue at once, but if the same animal the next day be chilled by a bath at 87°, gr. $\frac{2}{3}$ of cocaine produces no convulsion, while, if the bath be raised to 102° without making a new injection, very violent convulsions appear. It is also noticed that the convulsions themselves raise the temperature. Of course, unless this vicious circle is broken, the animal perishes by failure of the heart and respiration. Refrigeration thus appears to be the best way to combat this toxic action of the drug.—*L' Union Méd.*

CARBOLATE OF CAMPHOR.—DR. A. T. PEETE says: The method by which I now make the preparation is the simplest and easiest I have found, and is as follows:

In a 6 oz. bottle place—

Carbolic acid (white crystals)	℥iiss.
Alcohol	ʒii.
To this gum camphor	℥iii.

The camphor should be shaved small with a knife and added gradually as it taken up. The result is a colorless, transparent fluid, having a somewhat oily consistence. If the fluid becomes turbid from excess of camphor, add carbolic acid and alcohol, drop by drop until it becomes again transparent.

I find this preparation to be a powerful antiseptic. It has all the therapeutic properties of carbolic acid and camphor, with some additional virtues. It is bland an non-irritating, and may be rubbed over the face without injurious effects. It is also strongly anodyne when used locally, relieving the pain of wounds, sores, ulcers, etc., almost instantly. Having no toxic properties it will have a wide range of usefulness, as an antiseptic, deodorant, and anodyne healing agent.—*Southern Dental Journal.*

NICKEL-PLATING SOLUTION.—According to the *Bulletin Internationale de l' Electricite*, the following solution is employed for nickel-plating by several firms in Hainault. It is said to give a thick coating of nickel, firmly and rapidly deposited. The composition of the bath is as follows:

Sulphate of nickel	1 lb.
Neutral tartrate of ammonia	11.6 ozs.
Tannic acid with ether	0.8 oz.
Water	16 pints.

The neutral tartrate of ammonia is obtained by saturating tartaric acid solution with ammonia. The nickel sulphate to be added must be carefully neutralized. This having been done, the whole is dissolved in rather more than three pints of water, and boiled for about a quarter of an hour. Sufficient water is then added to make about sixteen pints of solution, and the whole is finally filtered. The deposit obtained is said to be white, soft, and homogeneous. It has no roughness of surface and will not scale off, provided the plates have been thorougly cleaned. By this method good nickel deposits can be obtained on either the rough or prepared casting, and at a net cost which, we are told, barely exceeds that of copper-plating.—*Scientific American.*

Societies.

"Wherewith one may edify another."

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The National Association of Dental Faculties will meet in a fifth annual session at the Gault House, in the City of Louisville, Ky., at 9:00 A. M., on Monday August 27, 1888.

In order that this meeting may be dispatched before the Southern and American Dental Associations get to work, it is hoped that the entire membership may be represented promptly at the hour indicated.

Junius E. Cravens, *Sec'y*, Indianapolis, Ind.
A. O. Hunt, *Pres't*, Iowa City, Iowa.

OHIO STATE DENTAL SOCIETY.

The fourth annual meeting of the Ohio State Dental Society, as reorganized, will be held in Cincinnati, Oct. 16, 17 and 18, 1888.

Every effort will be used to make this the best meeting ever held in the State.

J. R. Callahan, *Sec'y*, Hillsboro, O.
J. E. Robinson, *Pres't*.

NORTH CAROLINA STATE DENTAL ASSOCIATION.

The fourteenth annual meeting of the North Carolina State Dental Association convened on the 12 inst. It was the largest gathering in the history of the Society. The following gentlemen were elected for the ensuing year:

V. E. Turner, President; C. A. Reminger, 1st Vice-President; F. S. Harris, 2d Vice-President; J. W. Hunter, Treasurer; H. C. Herring, Secretary, Concord, N. C.

DENTAL COLLEGE COMMENCEMENTS.

HARVARD UNIVERSITY.—DENTAL DEPARTMENT.

At the commencement exercises the president of the University, C. W. Eliot, LL.D., conferred the Degree of Doctor of Dental Medicine on the following named (six) persons:

G. P. Geist, F. P. Graves, E. P. Holmes, H. A. Kelly, T. G. Read, L.D.S., F. A. Stevenson.

UNIVERSITY OF MICHIGAN.—DENTAL DEPARTMENT.

At the annual commencement exercises of Michigan University, held at Ann Arbor, Mich., on Thursday, June 28th, the Degree of Doctor of Dental Surgery was conferred upon the following named (37) persons:

H. A. Benson, C. W. Berry, W. T. Binzley, H. P. Brierley, E. Butts, R. E. Drake, W. F. Dunlop, F. H. Essig, W. B. Flynn, S. M. Fowler, J. J. Garcia, B. S., A. N. Hart, E. B. Hause, O. W. Huff, E. T. Loeffler, B. S., O. Marx, T. S. Maxwell, C. E. Meerhoff, R. E. Moll, I. Myers, R. P. Nagle, H. C. Nickels, C. W. Nutting, H. E. Parshall, W. O. Randall, H. C. Raymond, T. S. Reuter, H. W. Riser, M. J. Robinson, H. M. Seybold, M. C. Sheehan, L. C. Smith, S. M. Stauffer, M. D. Vandenberg, A. F. Webster, W. H. Woodburn, W. T. Wright.

BOSTON DENTAL COLLEGE.

The twenty-first annual commencement exercises of the Boston Dental College were held at Parker Memorial Hall, Boston, Mass., on Wednesday evening, June 20th, 1888. The address to the graduates was delivered by the Rev. Charles A. Dickinson, and the valedictory address by Theodore G. Huntington, D.D.S. The number of matriculates was 68, and upon the following named nineteen persons the Degree of Doctor of Dental Surgery was conferred by I. J. Wetherbee, D.D.S., the president of the College:

C. H. Allen, Mass.; J. S. Engs, Rhode Island; A. A. Frost, Mass.; F. M. Hemenway, Mass.; E. C. Hincley, Mass.; C. E. H. Higgins, Mass.; T. G. Huntington, Mass.; F. A. Knowlton, Me.; E. H. Lincoln, Me.; F. De S. Magee, Me.; T. P. Morey, Colombo, Ceylon; M. J. O'Connor, Mass.; J. W. Patch, Mass.; F. P. Piper, Mass.; L. O. Pollard, New Hampshire; W. Rice, Mass.; A. E. Snow, Mass.; B. B. Stoddard, Mass.; H. H. Warren, Mass.

AMERICAN DENTAL ASSOCIATION.
SOUTHERN DENTAL ASSOCIATION.

A JOINT meeting of the two Associations will be held in Louisville, Ky., commencing August 28, 1888. This will be the 28th annual meeting of the American and the 20th of the Southern Society, and for the sessions the committees of the two have provided the following programme:

TUESDAY MORNING, 9 A. M.—Separate meetings of the two Associations for the payment of dues, the receiving of credentials and the transaction of routine business.

TUESDAY AFTERNOON, 2.30 P. M.—Meeting of the different joint committees for the examination of the papers to be read by them.

TUESDAY EVENING, 7.30 P. M.—(As the joint session is only for scientific and social purposes, nothing but professional subjects will be discussed or acted upon). Meeting of the joint session, to be presided over by Frank Abbott and B. H. Catching. President Abbott's address. President Catching's address. Discussion on the same. Reports of joint committees and discussions thereon. Announcements from the Chair. Adjournment.

WEDNESDAY MORNING, 9 A. M.—Meeting of the joint session, presided over by B. H. Catching.

WEDNESDAY AFTERNOON.—To be devoted to the work of the joint committees, or to business meetings of the Associations if such should be necessary, or to clinics.

WEDNESDAY EVENING, 7.30 P. M.—Meeting of joint session, presided over by Frank Abbott.

THURSDAY MORNING, 9 A. M.—Meeting of joint session, presided over by B. H. Catching.

THURSDAY AFTERNOON.—Committee work, or business meetings, or clinics.

THURSDAY EVENING, 7.30 P. M.—Meeting of joint session, presided over by Frank Abbott.

FRIDAY MORNING, 9 A. M.—Meeting of the joint session, presided over by B. H. Catching.

FRIDAY AFTERNOON, 3 P. M.—Separate Meetings of the two Associations for the selection of place of next meeting, the election of officers, and the transaction of such other business as may come before them.

FRIDAY EVENING, 7.30 P. M.—Meeting of joint session, presided over by Frank Abbott.

SATURDAY MORNING, 8.30 A. M. to 1.30 P. M.—Clinics.

SATURDAY AFTERNOON, 3 P. M.—Separate meeting of the two Associations for closing business.

The joint committees will be called in the following order, and any committee failing to respond will be passed and not again called until all the others have been.

The reports of these committees will be written and offered by the chairmen, and will specify the papers to be presented and the order in which they shall be read, and such subjects for discussion or such suggestions as they may wish to bring to the attention of the joint session.

OPERATIVE DENTISTRY.—Geo. H. Winkler, of the Southern Dental Association; E. T. Darby, of the American Dental Association, Chairmen. Report to be presented by Geo. H. Winkler.

HISTOLOGY AND MICROSCOPY.—Frank Abbott, of the American Dental Association; John G. McCullock, of the Southern Dental Association, Chairmen. Report by Frank Abbott.

MATERIA MEDICA AND THERAPEUTICS.—John C. Story, of the Southern Dental Association; A. W. Harlan, of the American Dental Association, Chairmen. Report by John C. Story.

PHYSIOLOGY AND ETIOLOGY.—H. A. Smith, of the American Dental Association; E. S. Chisholm, of the Southern Dental Association. Chairmen. Report by H. A. Smith.

ANATOMY, PATHOLOGY AND SURGERY.—Morgan Adams, of the Southern Dental Association; T. W. Brophy, of the American Dental Association, Chairmen. Report by Morgan Adams.

PROSTHETIC DENTISTRY, METALLURGY AND CHEMISTRY.—J. Rollo Knapp, of the American Dental Association; V. E. Turner, of the Southern Dental Association, Chairmen. Report by J. Rollo Knapp.

DENTAL EDUCATION, LITERATURE AND NOMENCLATURE.—J. Taft, of the Southern Dental Association; W. H. Atkinson, of the American Dental Association, Chairmen. Report by J. Taft.

HYGIENE.—Geo. J. Friedrichs, of the American Dental Association; J. L. Mewburn, of the Southern Dental Association, Chairmen. Report by Geo. J. Friedrichs.

COMMITTEE ON VOLUNTARY PAPERS.—G. F. S. Wright, of the Southern Dental Association; S. H. Guilford, of the American Dental Association, Chairmen.

This committee will examine all papers not previously presented to the other committees, and those that are accepted they will refer to the appropriate committees.

All papers to be read before the joint session, except the two Presidents' addresses, must be placed in the hands of the chairmen of the appropriate joint committees who will examine them and report those only they deem worthy of presentation to the joint session.

The following rules of order will govern this joint session:

No member of either Association shall be entitled to the floor unless he is in good standing and his dues are fully paid.

No person shall speak more than twice upon the same subject nor more than ten minutes in all, unless consent is given by a majority vote of the joint session.

No one shall be permitted to address the meeting before giving his name and residence, which shall be distinctly announced from the chair.

When a paper has been read it shall at once be handed to the Secretary of the Association from which it came.

Any paper or report to be entitled to publication in the transactions must be placed in the hands of the Publication Committee by the 15th of September, 1888, and must be so prepared that the proof-sheets furnished the author shall be returned to the committee without material alteration or addition.

Roberts' Rules of Order shall be the authority governing this meeting, if any is needed more than is embodied in the foregoing rules.

Books and Pamphlets.

ALDEN'S MANIFOLD CYCLOPEDIA OF KNOWLEDGE AND LANGUAGE. One of the most extraordinary literary enterprises of the age is the work which bears the above title.

The specimen pages which the publisher sends free to any applicant, show the type which is used—a good clear-faced Brevier; also the form, "Ideal" for convenience, easy for the eye, handy to hold.

There will be several thousand illustrations—no "mere pictures," but everything of importance that will serve to explain the text.

The Manifold Cyclopedia is much more than a "Cyclopedia of Universal Knowledge"; it embodies also a Dictionary of the English Language—including every word which has just claim to a place in the language. How often you have consulted Cyclopedias and failed to find the title you were looking for—then consulted Webster's Unabridged and were successful; the word belonged to the Dictionary rather than to the Cyclopedia. Or you have consulted Webster, and found little more than a mere definition of the word—you must go to the Cyclopedia for details of knowledge. In the Manifold Cyclopedia you will find a survey of all knowledge which is illustrated by the English Language, and the cost is hardly more than commonly charged for a Dictionary alone.

Editorial talent second to none in America, in *experience* and *skill* is engaged in the conduct of the work; the publisher's past experience in Cyclopedia making (notably in The Library of Universal Knowledge, now known—trebled in price—as the International Cyclopedia) is good basis for the pledge he makes to his patrons that The Manifold shall be inferior to no other Cyclopedia in any of the important qualities of a popular guide to knowledge. Specimen pages free, or a specimen volume may be ordered and returned if not wanted; 50 cents per volume for cloth, 65 cents for half Morocco binding; postage 10c. extra. John B. Alden, Publisher, 393 Pearl St., New York.

DAS FÜLLEN DER ZAHN BEI INTACTER PULPA. Mit besonderer Berücksichtigung der Verwendung von cohäsiver Goldfolie. Von Ludwig Warnekros, Zahnartz in Berlin. Verlag von C. Ash & Sons, Berlin 1888.

[The filling of teeth with intact pulps with special reference to the use of cohesive gold.]

This book of 107 pages is neatly printed and bound. The numerous illustrations are well gotten up and demonstrate perfectly the ideas the author wishes to convey. In the cuts where gold is being inserted in the cavities, it is printed in bronze making a striking effect. The cuts are very large thus illustrating to better advantage the shape of various cavities, etc. The author first speaks of the disposition of caries and the searching for caries. He then takes up the subject of materials for filling, gold, amalgam, cement and gutta-percha, then speaks of the exclusion of moisture from cavities by means of both napkins and the rubber dam, giving the method of application and manipulation.

In taking up the filling of teeth he treats of the various cavities and the use of the different filling materials, illustrating the mode of insertion of each. Although there is nothing new in the work there is much that will be beneficial to the student, and of interest to the practitioner. His method of shaping crown cavities with an undercut at the posterior wall only cannot be fully indorsed, yet every practitioner has his own ideas regarding the shaping of the different class of cavities.

In the use of the matrix the author speaks only of the old-fashioned straight matrix, which in America is now mostly cast aside, superceded by the new and improved forms. Although not complete the work as a whole is a good start in the direction of a treatise on operative dentistry, and we hope it will serve as a stimulus to some of our able Americans to take up the work and furnish the profession with an *ideal* book on this important subject,

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A COMPEND OF HUMAN PHYSIOLOGY. Especially adapted for the use of Medical Students. By Albert P. Brubaker, A.M., M.D., Demonstrator of Physiology in the Jefferson Medical College; Professor of Physiology, Pennsylvania College of Dental Surgery; Member of the Pathological Society of Philadelphia. Fourth Edition, Revised and Enlarged. With Illustrations and a Table of Physiological Constants. Philadelphia: P. Blakiston, Son & Co. Cloth $1.00, interleaved $1.25.

This is No. 4 in the "Quiz Compend" series, thoroughly revised and enlarged. It is intended for the use of students particularly, but contains so much information no where else collected in such condensed and practical shape, that it is a valuable work for every one and is worth many times the cost.

UEBER BISSARTEN UND BISSANOMALIEN. (Characteristics and Anomalies of the "Bite.") A study by Alfred Sternfeld, M.D., Munich, Germany. Munich, 1888: Knorr & Hirth. Sixty-five 8vo pages and 14 plates, containing 92 illustrations.

COCAINE DOSAGE AND COCAINE ADDICTION AND COCAINE TOXÆMIA, by Dr. J. B. Mattison, Brooklyn, N. Y. Reprint from the *Lancet*, London, 1888.

THE INDEPENDENT PRACTITIONER is now controlled and published by the International Dental Journal Association, of which the headquarters will be at Philadelphia. Dr. W. C. Barrett retires and Dr. W. X. Sudduth occupies the editorial chair. If the journal improves as rapidly under the present management as through the persistent effort of the able ex-editor we predict a very successful future.

Our Aftermath.

Dr. Parmly Brown is giving clinics in Crown and Bridge-Work, in England.

Half Holiday.—Some of the Chicago dentists propose to take a half holiday on Saturdays. The members of the *Review* staff were the prime movers in this direction.

Sweeter than Sugar.—Somebody claims to have discovered a substance which is "three hundred times as sweet as sugar." The "substance" is supposed to be about eighteen years old, and wears a bustle.

Married at Akron, Ohio, Wednesday, June 27th, 1888, Dr. Will H. Whitslar, Youngstown, Ohio, to Miss Nellie M. Chisnell, of Akron, Ohio.

The Ohio Journal extends hearty congratulations and best wishes of a successful career.

An Awful Consequence.—The latest "victim of tobacco" is a sad case, indeed. He is seventy years old, has smoked for sixty years, and last week he married a woman four years his senior. Tobacco-smoking affected his brain.—*Contemporary.*

Filled with Woe.—Mistress: "Well, Bridget, did you see the dentist?"

Biddy O'Galway: "Yis, ma'am."

Mistress: "Did he pull your tooth?"

Biddy O'Galway: "Sure, ma'am, he didn't lay a han' to it to pull at all. He scooped it out wid a wee hoe, an' thin he druv it in to stay feriver—wid a plug on the top o' it to kape it tight. I'll niver be caught doin' the likes ag'in, ma'am. Vhat with him upsettin' the sate he put me in, an' tyin' a bit av an old gum shoe in me mouth fer a bib, an' makin' a noise the size o' a coffee-mill in my head, I'd laver walk the flure an' scrame."—*Puck.*

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

THE LIBERATION OF FREE PHOSPHORIC ACID FROM PHOSPHATE OF ZINC, ITS EFFECT UPON THE DENTAL TISSUES.

BY LEVITT E. CUSTER, B.S., D.D.S., DAYTON, O.

THERE is a class of reactions with which we as dentists have to deal, which exhibit similar phenomena. They are not true chemical reactions and yet are not simply mixtures, but when brought together one of the constituents changes its form from a liquid to a liquid of crystallization, and by that means we have an intermediate class of reactions, and products are formed which differ in their physical characteristics from either of the original components. They are similar in their constituents as they consist of a powder, which is an oxide or a sulphate of a metal, and a liquid, a dilute acid or water. They are similar in that upon union they all show an appreciable rise of temperature which is due to the latent heat set free upon the liquid assuming the crystalline form. They are similar in that all the powders may be brought back by reduction of the fluid from the crystalline form, if water by heat, or if an acid by neutralization by an alkali.

The above reactions referred to are the crystallization of the zinc cements and plaster-of-Paris with which you are all familiar. Although they differ slightly in their chemical nature, when the liquid and powder are mixed, they all alike crystallize, giving off heat and becoming a hard mass.

I find no explanation of the phenomenon of this class of reactions, but I apprehend that if they were analyzed they would be found to be entirely dependent upon the crystallization of the liquid portion, which crystallization is induced by the presence of and the conditions afforded by the powder which in turn is incorporated in the crystallizing liquid. It partakes the nature of a mixture in that the powder retains its color and form and seems only to be incorporated in the liquid of crystallization, and it partakes the nature of a chemical reaction in that only a definite proportion of the liquid may be induced to assume the crystalline form, no matter how much there may be present. An excess may be present upon setting, but this disappears in a free state by evaporation, and in proportion as there has been brought together the requisite quantities of each for perfect crystallization of the liquid without disparity or excess, will the product be more dense or resisting. As there has been a surplus of the liquid will the particles of the powder have been separated from one another, and as there has been a lacking will there be contact, but not held by the proper amount of crystallized fluid. A perfectly proportioned cement which produces crystallization in all the liquid without allowing any evaporation is seldom produced. No dentist pretends that he can mix a cement in just the proper proportions; he almost always adds more of the liquid than is necessary, the surplus being liberated in the free state. Very often cases are present where extreme fluidity is required and in such instances more than the usual amount of the liquid is used and afterwards set free.

I have given this cursory review of the similarity of the components and their action in the hardening of the zinc cements and plaster-of-Paris in order that the thought can be better followed in the discussion of the proposition that free phosphoric acid is liberated in the setting of the so-called oxyphosphate of zinc cement.

It is agreed then that there is a very close resemblance between the constituents of the zinc cements and plaster-of-Paris, and that there is a perfect similarity in all the phenomena shown during their crystallization, so whatever is found to be true of any one or two of them may be taken to be true of the others. Therefore, reasoning from analogy, as the acid chloride of zinc is liberated in a free state from the oxychloride of zinc cement, and water from plaster-of-Paris during crystallization, so must be phosphoric acid in the setting of the phosphate zinc cement. That chloride of zinc is liberated in the setting of the oxycloride of zinc, is well known. The therapeutic effect of that cement is attributed to the acid portion which acts the same after evaporation from the cement as it did before being mixed. We fill a partly prepared cavity with this cement that the free acid may coagulate the albumen and we may painlessly complete the operation; we line deep cavities with it that it may induce a deposit of secondary dentine; we cap exposed pulps with it that perchance they should die, they succor to dry gangrene, producing no secondary effects; and we fill root canals with it that the micro-organisms may be destroyed and the parts be put in an antiseptic condition. This is due to chloride of zinc which is liberated in a free state. Had there been a complete chemical reaction taking place and an entirely different substance formed, there would have been no free acid; but since it partakes the nature of both a chemical reaction and a mixture, we find there has not been a complete transformation, and a portion of the fluid is free.

The presence of free water in plaster-of-Paris is shown by placing a fresh cast under an inverted tumbler. Whence the origin of those globules of water but from the cast? Being liberated in a free state in the enclosed air which soon becomes supersaturated, the water is precipitated upon the sides of the tumbler.

Now phosphate of zinc being of the nature of oxychloride of zinc and plaster-of-Paris, reasoning by analogy alone we would believe that free phosphoric acid is liberated in the setting of that cement. But this is only theory, to substantiate which, I present the following experiments: A freshly mixed mass of phosphate of zinc being placed in a small bottle containing a piece of blue litmus paper, moisture is seen to collect upon the inside and at the same time the litmus paper turns red, proving the presence of a free fluid and its acid reaction. Carrying our experiment a step further, place a tooth in the liquid which accompanies the cement and in an hour the gloss will have been removed from the enamel and in five days the enamel will have been entirely dissolved. The lime salts of the cementum seem to be protected from this action by the presence of the remainder of the peridental membrane. Cover a tooth with phosphate of zinc and after thorough crystallization remove and you will find the gloss to have disappeared from the enamel. Cover a tooth with a thin cement and cover the latter with a metal cap as you would set a Richmond crown so that all the free acid will act upon the enamel, remove in a month's time and you will find the superficial layer of the enamel entirely decalcified. What more conclusive proof than this can be desired to substantiate the original proposition that free phosphoric acid is liberated during the crystallization of phosphate of zinc cement?

In dental practice phosphate of zinc has a useful place, but it is not to be used indiscriminately and without a knowledge of the effect of the free acid upon the different tissues. I have already shown its action upon enamel so that in using it as an adjunct in orthodontia in attaching bands and retaining appliances it would be well to have them very close fitting and perforated for the escape of the free acid.

The decalcifying effect of phosphoric acid upon dentine is similar to that upon enamel, but not so severe on account of the large proportion of animal matter.

While its action upon the pulp is in a manner less painful it is not the less sure of producing death than arsenic itself. As a protector from the thermal changes and a capping for exposed pulps, phosphate of zinc has been highly recommended and often without any restrictions whatever, yet how many pulps owe the cause of their death to the indiscriminate use of this material? Slowly and stealthily it emits destruction until death and abscess result.

Phosphate of zinc by virtue of its already many good qualities may have its sphere of usefulness increased by overcoming this fault. Free acid cannot well be prevented, hence we must look in another direction to correct it, not by neutralizing it before mixing for that would prevent crystallization, but by protecting the tissues from its action by an intervening layer of some substance upon which this acid has no effect. After experiment I find that teeth coated with an ordinary sandarach varnish, a solution of Canada balsam and chloroform, a thin layer of paraffine, or a layer of chloro-percha, are not effected by phosphoric acid. Hence any of the above would answer the purpose. The varnish has been spoken of before and I prefer it because of its ease in application waiting a few minutes for the alcohol to evaporate. It has been my custom after coating with one of the above to use as little cement as is necessary and if possible to allow the case to rest in that condition until the next sitting, and by that way not enclosing the free acid by a filling as the case may be. A little care along the line pointed out will produce better results than by the careless way in which phosphate of zinc was formerly used.

A NEW METHOD OF ADAPTING AND SETTING ARTIFICIAL CROWNS.

BY S. DAVIS, D.D.S., DENVER, COL.

[Given as a clinic at the Colorado State Dental Association, June 5, 1888.]

SETTING PLATINUM PINS INTO PORCELAIN FOR TIPS, FILLINGS, ETC.

All those who set artificial crowns to roots of teeth, understand the advantages of having each piece separate, viz.: The facing, band, and pin. It is also desirable to have these in one solid piece before cementing to the root, leaving no place for secretions and having a strong, substantial crown. 1st, adapt the band or ferrule to the root; 2nd, take a plate tooth with pins crosswise, grind the cervical portion to fit over the band, neat with the gums; 3rd, place the pin in position, close the pins in the plate tooth to hold the pivot pin, back up with wax to hold the band tooth, and remove all from the root. Mix some finely powdered white glass with water and work in between the band and tooth crown, invest in marble dust and plaster, and remove the wax. With the blow pipe gradually bring all up to a red heat. Select a piece of white or opaque glass about the size of the wax removed. Fuse with the blow pipe, and while in a molten state, press in by touch of an instrument, especially soap-stone, or clay pipe stem ground to suit, to fill the space left by the wax; when cool grind with a corundum stone to the desired shape, and polish with pumice stone on a felt wheel. Always cover the piece with asbestos foil while cooling. This is the practical crown and equal to any crown with the pin baked in.

Another way to make a fine crown: Take the old wooden pivot tooth, cut a slot into the pivot hole lengthwise from posterior side of the tooth, band it, and proceed as above.

Glass when fused has a great affinity for artificial tooth substance and for gold, and will fuse at a point less than 20 karat gold. As to strength it is all that is required for the purpose.

PORCELAIN TIPS FOR NATURAL TEETH, FILLINGS, ETC.

After filling properly make holes with a diamond drill, place some of the powder around the pins, fold in a piece of asbestos paper and fuse with the blow pipe. Pins broken from artificial teeth can be replaced by this process equal to those baked in.

PROSTHETIC DENTISTRY.

BY DR. H. H. NEWTON, CLEVELAND, O.

[Read before the Cleveland Dental Society.]

I HAVE chosen this topic for our consideration because it has received less thought and consideration from the best men of our profession than any department of our calling. I think you will agree with me in the statement that it requires a higher degree of artistic skill and good judgment in the selection of a set of teeth to conform in size, form and color to harmonize with the temperament and the physiological relations and adaptation to the purposes of mastication and articulation, than it does to perform a nice operation in filling. At least I have found it, more difficult, in an artistic sense, to reach my ideal.

The mechanical dentist who devotes his time to administering gas or vitalized air and extracting teeth by the wholesale, (the slaughter of the innocents,) and putting in teeth at $5.00 to $10.00 a set, has but a small conception of the fitness of things. With him one set of teeth suits the case as well as another. Who is to blame for this state of things? What force of circumstances has developed it? Is it not true that we have allowed this matter to shape itself because we have been remiss in our duty as a profession to those who give us their confidence? I often hear the remark by the best operators that they are not doing any mechanical work. It may be best that our profession like the medical, shall be divided into specialties. If so, let it be that each one in his specialty shall be thoroughly fitted for his work.

One great reason why the best operators have ignored the making of artificial dentures, is the fact that it is not quite as remunerative as the operative, and another fact that it is dirty work and consequently not so professional.

The time was when the fathers of the profession devoted themselves to each department of operative and mechanical, and did not consider it derogatory to their professional standing. At the present time a great majority of the artificial work is in the hands of a class of men who have but little fitness for their work. Who do not realize the fact that something is wrong when they meet these deformities of artificial teeth wherever they go. It is a disgrace to the profession that such a state of things has been permitted to exist. I am very glad to realize, however, that at the present time there seems to be a revival in the direction of prosthetic dentistry. The best men are taking hold of this matter in earnest. The various kinds of metal work are coming to the front where they ought to be, for they have had the back seat long enough.

I am very favorably impressed with Dr. Carroll's new process of casting aluminum plates and I hope our best men will give it a fair trial. One good feature of it is that it will require great skill in its manipulation and only the most skillful will be able to work it successfully. Some years ago I experimented in the casting of dental plates by the Hollingsworth method, but was not successful in results in nice work. I then tried the swaging of plates, and inserted quite a number of sets, but soon found that the material etched so badly in the mouth that I abandoned its use and was convinced that the metal itself was not suitable for dental purposes. Dr. Carroll seems to have purified the metal and combined others with it in such ways as to overcome many if not all the objections that were then so apparent. The work that pleases me best, and in which I have had considerable experience, is the combination of gold and rubber. We have in the gold plate, cleanliness, strength and durability without thickness to interfere with the correct articulation of words. It is a good conductor of electricity, heat and cold, thereby keeping the sensitive membranes under the plate as near a normal condition as it is possible. The rubber being a plastic material it enables us to build out and restore lost bone and tissue.

The first step and foundation for a perfect fitting denture is a good impression which can be obtained in the following manner: First examine the mouth to ascertain what conditions we have to meet, then select a cup considerably larger than the mouth and take the impression in wax, reaching well over the alveolar borders, then harden the wax in cold water and take a knife and trim away from the entire surface upon which you expect your plate to rest, about two lines in thickness of the wax. Leave the wax intact at the back part of the impression next to the soft palate, to prevent the overflow of plaster into the throat. My reasons for taking an impression in this manner is to have an equal thickness of plaster over the entire surface of your impression which makes the expansion of plaster equal, which is of great importance in practical work. You also save much annoyance to yourself and patients by not using much plaster, so you need have but little overplus. Before taking your plaster impression, hold your cup and wax over a lamp long enough to melt the wax to prevent them from separating in removing the impression from the mouth.

The next step is to ascertain the condition of the mouth so that you may prepare your model accordingly. If there are soft parts of the palate the model should be scraped enough so the plate will compress the parts to some extent. The hard parts should be left alone. In shaping the models for moulding if there are no undercuts it can be tapered so it can be drawn from the sand without displacement, otherwise use Hawes' moulding flask which is perfect of its kind and by its use any model can be moulded perfectly. I use sand wet with water and a little practice enables one to soon learn how to manage it. I prefer water because it is more cleanly than oil and does not smell so badly in the office. After moulding and casting my zinc die I make one of Babbitt metal also. Then I melt my lead and pour it into my cast iron swaging dish and dip my zinc die. I make two counter dies of lead in this way, one to make my plate with the zinc, and the other to finish my plate with the Babbitt die. Before finishing on the Babbitt, the plate should be nicely trimmed and soldered at the nose or front part.

In the process of swaging a gold plate great care should be used not to wrinkle or bruise the gold, anneal often, and before annealing throw your plate into a bath of nitric acid to remove any particles of lead or zinc that may adhere to it. I use alcohol instead of sulphuric acid to remove oxidation, it renders the gold tough and is more cleanly. One word in regard to the metals, zinc, lead and Babbitt. Do not let them get mixed for they are incompatible with each other. Have a ladle for each. To keep your zinc in a nice clean condition use muriate of ammonia as a flux, and you will always make a clean smooth die. In swaging lower plates of gold do it in two parts, one at a time, and solder together by a lap of half an inch. Put finely ground flux between the laps and confine with two little clamps, the solder will flow in between the parts and will stiffen the plate at the point where it is needed.

The next and a very important step is to fit the plate to the mouth by trimming to the proper width so it does not impinge upon any attachments of the muscles. These should be left perfectly free to perform their functions unrestricted. However well a plate may fit the mouth the restriction of any of the muscles in speaking or mastication, the plate will be displaced.

We come now to another important step, to get the articulation which determines the size, form, length and color of teeth. Now comes the artistic part of prosthetic dentistry. Select a set of teeth that will conform to the temperament of your patient. If it be simply an upper set with good lower teeth we shall not have much difficulty, but if it is an upper and lower we have to go by the temperament, even here if we have studied temperaments well and know the types that produce certain forms of teeth, we are not wholly at sea. This part of prosthetic dentistry has not been studied as it should, and I am of the opinion that it can be reduced to almost an exact science. I suggest that we as a body give this subject more thought.

One point in the articulation of artificial teeth which has been overlooked by men who have given this subject but little atttention, is the articulation of their crowns. The keen observer of nature will be at no loss and is constantly learning lessons by which to profit in his daily practice. Who among us has not admired the well filled arches of natural teeth and the beautiful arrangement in articulation of their outer and inner cusps, and how perfectly they are adapted to the purpose of mastication? In articulating artificial teeth we should follow nature as closely as possible. The inner and outer cusps should always articulate perfectly. If the outer cusps are the longest, we have a faulty masticating surface and a tilting plate and no end of annoyance to self and patient.

Dr. Bonwill, in his chapter in the *American System of Dentistry*, says: "After more than thirty years of active practice in dentistry I am fully persuaded that of all that constitutes dentistry proper, the mechanical forms the basis. And yet to make anything that is beautiful in our art, especially in vieing with nature in matching the teeth, we must be more than mere mechanics, more than capable of filling a tooth or treating an abscess; we must be *dental artists.* When we introduce a set of teeth upon which depends so largely the expression of the face from the soul beneath, we must bring to our aid not only the laws of mechanics and geometry, but the beauties of art. It is not enough that we accurately adapt the plate to the gums, that we so grind the teeth to the plate and make every joint perfect, that we so polish the plate over symmetrical curves that the tongue cannot find the least fault. We must do something beside this: we must impart action to these otherwise whited sepulchres; we must instill life therein or our labor will be in vain." A tooth may be elegantly shaped and colored, yet if it lacks the proper shape and color for the person intended, and is unskillfully set in the arch, it is a failure. The dentist's taste should be so cultivated that he will be apt to criticise his own selections.

Dr. Bonwill's ideas in reference to the geometrical and mechanical laws of the articulation of the human teeth, are very forcibly illustrated and are a valuable acquisition to our store of knowledge. It would be well if every student in dental practice should thoroughly study his methods and reduce them to general practice.

One suggestion I would like to make in reference to the articulation of partial sets of teeth. Do not under any circumstances let a natural tooth antagonize with an artificial, or where there are upper and lower partial sets do not let the artificial strike each other, but leave a space of about half a line between their crowns. It will obviate the clicking sound and also enable one to get through with a meal if a seed should get between the plate and gum.

As I have had some experience with the bridge-work it will, perhaps, be expected that I shall say something in regard to it. It does not meet my expectations and it is my opinion that it will not have a very long run. It is a fine thing in some cases, but must be used with a good deal of caution and discrimination. It is a fine thing in lower front teeth where it is so difficult to make a plate. There is no one kind of work that will suit all cases.

LABIAL AND PALATINE CAVITIES—CAUSE, MODE OF PREPARATION, AND WITH WHAT TO FILL THEM.

BY H. F. HARVEY, D.D.S., CLEVELAND, O.

[Read before the Northern Ohio Dental Association, May 8, 1888.]

The etiology of dental caries has been in the past, and is still the subject of much thought in dental literature, and of much discussion in the various societies throughout the country.

The subject is one that demands and is receiving the attention of the most scientific men in the profession, and the least I could hope for or the most that I can expect to accomplish, is to comply with the programme as prepared by the Executive Committee (without consulting the author) and bring this question before the society for discussion. In view of the fact that this subject has already received so much attention, would it not be well at this point to consider a few reasons why this question has so long remained unsettled?

In the first place it must be borne in mind that there are comparatively few men who are competent for scientific investigation.

As a profession we are not systematic enough in our methods of observation. We do not study our cases with the critical care that we ought, or take sufficient notes concerning them.

Investigations in this direction must be conducted by men who have spent much time in preparing themselves for the work, and until we can secure a number of such men, properly qualified to experiment scientifically, the question will likely remain unsettled, and even then time must elapse for their conclusions to be verified.

It is gratifying, however, to know that we have some such men and that progress is being made. Work in this direction involves so much time and labor that it should receive substantial encouragement by the profession through the various societies. There are so many important factors that enter into the consideration of this subject that the causes of decay are commonly divided into two classes, viz., predisposing and exciting. The former includes hereditary, race, food, and climatic influences, modes of living, mental strain, lack of pure air and proper exercise, overtaxed nervous system, non-assimilation, and in fact all pathological conditions, the result of which is inferior structural development of the teeth, and the lack of power to resist the attack of what may be considered as the exciting causes. Under this latter class there seems to have been an effort on the part of investigators to find an active agent or a specific cause that would account for all decay in the human teeth.

Many theories have been advanced from time to time which vary as they are viewed from the scientific standpoint of the pathologist, chemist, electrician, or bacteriologist. At present the latter seems to be meeting with most favor, and according to this theory the micro-organisms take a very active part in the destruction of the human teeth. The experiments of Dr. Miller seem to have been conducted in a very scientific manner, (a fact which must carry weight with his conclusions,) and to quote briefly from him: "Decalcification is produced chiefly by acids resulting from the action of micro-organisms upon the carbohydrates in the human mouth, while the peptonization is produced either by the direct action of the protoplasm of the organisms upon the decalcified dentine or by a ferment which they produce." And further, he claims to have proven by different chemical analysis that the special acid concerned is lactic. A neutral or slightly alkaline condition of the mouth is normal. An acid condition is pathological. This pathological condition of the secretions of the mouth frequently accompanies some form of general disease and is often observed in parturition. Acid foods and medicines doubtless play an important role in decay of the teeth, not only locally but acting through the system. Local diseases of the gums and mucous membranes of the mouth often give rise to acidity of the secretions. Associated with these conditions we most frequently find the class of cavities designated by the title of this paper. These cavities usually appear at or near the margin of the gum, and occurring as they frequently do in teeth that otherwise seem perfect in structure, would indicate that the immediate cause or causes might have a different origin from that which produces decay in the crown of molars where there is defective enamel formation, or approximal surfaces where contact is a factor to be considered. Whether the exciting cause of these cavities is to be found in a specific that is common to all diseases in the teeth or whether they are the result of different influences, I leave for this society to discuss.

What we term erosion though most frequently occurring within the territorial limits of this paper can hardly be included in it, and for a very able article on this subject I would refer you to a paper published in the April number of the *Independent Practitioner*, 1886, by Dr. E. D. Swain, of Chicago. He leaves the subject for others to answer. I must be satisfied to close the first part of this paper in the same manner and proceed to a brief consideration of the second division of this subject: "The mode of preparation." This can be demonstrated clinically better than told, and as there is a clinic of this kind on the programme I will but briefly state a few principal points which of course must be modified as the necessities of a special case demand.

If the cavity extends much under the margin of the gum I first apply an 8 or 10% solution cocaine to lessen both pain and hemorrhage in securing the rubber dam in position. To secure dryness and access to the cavity are the first important points and not always easy to accomplish. The clamp that I find most satisfactory for the majority of labial cavities is Dr. Hodson's, No. 71, White's catalogue. This I modify by grinding the posterior part to about $\frac{1}{8}$ of an inch in width. After forcing it to the required position place a small wooden wedge between the anterior portion of the clamp and labial surface of tooth near the cutting edge. This will hold the clamp more firmly in position, and the loop being broad gives an opportunity to gain access to the cavity from all directions. The devise of Dr. Barnes, illustrated in April number of the OHIO JOURNAL, will be found useful in special cases. After removing more or less of the decay with an excavator, use a fissure bur with square end and size in proportion to cavity, carry this at right angle with the axis of the tooth, thus forming floor and margin of the cavity at the same time. Make slight undercut with hoe-shaped excavator or small wheel shaped bur and bevel the edges slightly with small finishing bur. There being no especial strain upon these fillings a slight anchorage is sufficient.

As regards the selection of a material for filling, circumstances must influence the operator in his choice for special cases. The extent of decay, quality of tooth structure, physical condition of patient, age, probable time that the tooth will be retained and location of cavity, are among the prominent points to be considered in deciding this question. For labial cavities gold is the standard, and gold or tin for the palatine. When plastic fillings are resorted to, gutta-percha or Hill's stopping should be used in preference to the cements where the cavities extend far beneath the margin of the gum, as the agents that cause these cavities seem to dissolve the cements.

DISCUSSION.

Dr. C. R. Butler: There are some good suggestions in the paper in regard to the preparation of these cavities. First, the securing of good access and dryness; and second, in the manner of cutting the cavity for the retention of the filling material. Many cavities can be cut in the main with excavators alone and often quicker and better than with the engine. There is no necessity for deep undercuts, but cut to such an angle that the gold will be retained until we get the filling securely anchored. This procedure is best in these cavities for when once inserted we have no masticating force to dislodge the filling. Often the cutting of pits is the most painful portion of our operations and if we can avoid this we should.

Dr. J. H. Siddall advised the younger men in the profession to witness operations of the older members and gain all they could.

Dr. H. Barnes had noticed in the labial cavities especially, that where operations have failed, the decay in many cases has extended upward beneath the gum, and realizing this fact designed a clamp and matrix that would fit up under the gum and not lacerate it. (See Ohio Journal, April number). After applying the matrix to the tooth if any portion of the rubber-dam extends into the cavity he dissolves it out with a little chloroform. The exposition of the cavity is perfect and an advantage gained in having a matrix that can be pushed from side to side and out of the way, on account of its pliability. This could be successfully used in many cases where clamps would not do. In regard to cements he had heard that some of the German makes were superior to our own, and if such is the case we should use them.

Dr. Butler: It is not the filling that fails but the tooth substance. How shall we treat these cases? He cited a case that came under his observation, a short time previous, where some of the teeth had been filled entirely with gold and others filled at the cervical border with tin and the rest of the cavity with gold thus leaving a dark line, perhaps the thickness of card-board, along the margin of the filling. These fillings, however, were preserving perfectly while most of the all gold fillings leaked. He further stated that very often this line can be covered by the gum and that we can get a good effect by this use of tin. Thus can we not lay aside the idea of some little disfigurment of color for the sake of good preservation?

Dr. Siddall spoke of a case where two kinds of metals had been used by the dentist and the patient complained of a peculiar sensation in the tooth thereafter. He inquired if it was due to the formation of an electric current?

Dr. Bethel inquired if the doctor did not find that in such cases the two metals were always separated and the gum or other tissue formed a conductor? As it is generally understood that where two metals are brought into immediate contact the electric current is not established.

Dr. Dewey said there must be some intervening substance to act as a conductor or no current will be established. In answer to Dr. Butler he thought that we can help check the decay in this situation by correcting the faults of the patients. That we have patients who take extra care of their teeth as far as brushing is concerned, but are at fault sometimes in eating sweets especially at night, and not perfectly cleansing the teeth thereafter. He had noticed, particularly in the mouths of servants and confectioners, that a white line of decay about the necks of teeth, was often very marked.

Dr. Barnes had noticed that the teeth on the side on which people slept most, were more decayed than upon the opposite side of the mouth.

Dr. Fowler said, three years ago I excavated two cavities, a cuspid and bicuspid, on the lower jaw. Filled the cuspid with gold when the patient said she could not afford gold in both so filled the bicuspid with tin. A few weeks ago the patient return ed and I found the gold filling undermined while the tin was preserving perfectly.

Dr. Butler inquired how Dr. Fowler used tin foil.

Dr. Fowler: Fold it in squares and make pellets; never roll.

Dr. Butler: By using direct and then lateral force in working tin you get a stronger mass than by direct pressure alone. By ruffling the sheet of tin before using you loosen the fibres and it works much more satisfactorily.

Dr. Bell was averse to using tin exclusively. He prefers tin and gold used by the Brophy method.

ULCERATIVE DISEASES OF THE MOUTH.

BY GEORGE J. DENNIS, M.D., D.D.S., ST. LOUIS, MO.

[Read before the Missouri State Dental Society, July 10, 1888.]

Superficial solution of the continuity of the external tissues of the body with the exudation of pus, lymph, and degenerated cells, are among the frequent diseases of the body. Mucous membranes are especially liable to degeneration and ulceration, owing to their delicate organization and the fact that they are more abundantly supplied with follicles and glands of greater or less secreting power, which easily become occluded or become inflamed and result in ulcerations of various forms. That lining of the mouth is very liable to such inflammations and degenerations, exposed as it is to irritations external as well as to those sympathetic irritations, dependent upon irritation in other parts of the alimentary tract. Hence, we find in the various complications arising from gastritis, enteritis, and other inflammations of the nutrient canal, the mouth also becomes an important factor. Constitutional diseases frequently have their local manifestations in the mouth which often end in extensive ulcerative processes.

As in other parts of the body, ulcerations take on a variety of appearances of greater or less diagnostic value. They may be round, oval, or irregular; their edges smooth, or ragged; their sides sloping, perpendicular, or undermined; their bases soft, and extensively infiltrated, or the infiltration may be hard and circumscribed, or very rarely, there may be no infiltrations whatever.

The floors of these ulcers may be sensitive and extremely painful, dependent upon the irritation, seat of the disease, and the acuteness of the attack.

The simplest ulcers found in the mouth, and those most frequently seen, are aphthæ. They appear in small round, or oval patches, in adults generally on the lips, at the reflection of the mucous membrane or to the gums. In children they are more apt to be found on the palate. Their history is interesting. From irritations, mechanical or chemical, from acid secretions of the mouth, from perversion of nutrition, or of the gastro-intestinal secretions, or from debilitating surroundings rendering the patient susceptible to disease, an inflammation is set up, catarrhal in form at first, with heat, redness, and slight swelling of the part. Later, the follicles of the mucous membrane become inflamed, little elevations containing pits appear on the surface. The mucous membrane becomes thickened by infiltration and in a few hours a whitish exudate is poured out in round, or oval spots, which vary in size, from that of a mustard seed to that of a bean. They are more often isolated, but may run into each other giving an irregular appearance.

The inflammation continuing there is quickly an increased secretion from the mucous membrane with cellular infiltration of the underlying tissue. The whitish exudate breaks down, degenerates, and the epithelial covering is thrown off leaving little whitish, yellow looking ulcers. Extreme sensitiveness of these spots on movement of the parts, accompanied by an avoidance of solid food, usually a lack of appetite and a feverish state of the system are characteristic of aphthæ. A slight odor may accompany these changes, but it is never so intense as in the severer ulcerative diseases. They remain, if not treated, two or three weeks, and again may heal in a few days on removal of the irritant.

The process of healing begins in a reddening of the floor of the ulcer, granulations covered with epithelium are thrown up from the bottom, and in a few days the entire ulcer has healed leaving no cicatrix.

When diphtheria is prevalent aphthæ may at first simulate it. However, in diphtheria the exudate begins on the tonsils and pharynx, in a thin translucent film looking like the white of an egg, works forward, growing thicker and more extensive, and springing from little centers as it spreads. The constitutional symptoms in diphtheria are early very marked and preclude any error in diagnosis.

Another ulcerative process is stomacace. It begins as an inflammation of the margins of the gums which quickly passes into destructive ulceration. The margins of the gums about the incisor teeth are its favorite point of commencement, then extending posteriorly to the molars. It is peculiar in that only one side is affected at a time. Later in its course it attacks the membrane lining the cheeks and tongue, but leaves the hard and soft palates entirely exempt from its destructive ravages. Accompanying these changes is an extensive redness and swelling and most offensive odor. Hemorrhages occur spontaneously. The secretions of the salivary and mucous glands are greatly increased and the saliva is changed in color to a brownish red. When this train of symptoms is completed in the adult the marginal ulcers penetrate deeper and deeper; the roots of the teeth are soon denuded and by the extensive destruction of tissue drop out; the pain at the same time being so great that life is a miserable existence. This disease seems by preference to select children who have just completed their first dentition, while it often attacks soldiers in garrison. The causes ascribed are contagion and bad hygienic conditions. According to a noted writer these same symptoms may be those of ptyalism, and cites mercury as one of the principal causes in the adult.

Scorbutus is a disease whose ulcerative processes in the mouth are most extensive. It presents many of the symptoms of the former disease; the process ending in both with loosening, and in the majority of the cases with the loss of the teeth. This difference is noted. In scorbutus the swelling of the gums is much greater, rising sometimes above the crowns of the teeth. Scorbutus is a constitutional disease, the ulceration of the mouth being simply symptomatic while stomacace is idiopathic in nature.

The syphilitic ulcers appearing in the mouth are chiefly secondary. Very rarely are they found primarily as the initial lesion. Their seat is on the pharynx, soft palate and tonsils. As the disease increases in severity they extend to the sides of the tongue, but never to the buccal surfaces. They grow slowly, are very permanent and stable in their location. They have also a great tendency to perforation, leaving behind great ulcers with ragged edges, and hard, callous bases. Only slight hemorrhages occur, and the pain is so slight that the patient experiences comparatively little annoyance. Constitutional treatment quickly confirms the diagnosis as they yield in a short time to specifics.

Thrush is a disease of childhood belonging properly to the fungoid affections, but owing to the tendency of the mucous membrane to ulceration may be considered here.

The fungi present in thrush are not the cause of the disease, but simply one of the effects, and are found only in unhealthy mouths where the secretions are vitiated, acid, and the mouth already subject to inflammatory action. As in the other ulcerative diseases the health of the patient is usually poor and the hygienic surroundings very bad.

The fungi once finding a ready soil in which to grow, set up a higher grade of inflammation, leading to destruction of the epithelial tissue. As the disease progresses the sub-epithelial tissue may become involved and the epithelial patches covered with the fungi fall off.

On examination the loosened masses are found to consist of mucus, epithelial cells, pus, and spores, held together by the long slender filaments of the oidium albicans.

This disease may extend to the nasal passages and pharynx, and has even been found throughout the full extent of the alimentary canal. It is usually found in emaciated children; very rarely is it found in healthy persons. The symptoms are at first those of ordinary stomatitis, increased heat, redness and swelling, pain on movement of the parts, a longing for cold drinks, a greatly increased amount of saliva and marked gastro-intestinal disturbance. A distinctly acid reaction of the mouth, together with the white patches, make the diagnosis easy.

So rarely is the oidium albicans found in the mouth of a healthy adult person, that the following case treated by Dr. B. Merrill Ricketts, of Cincinnati, Ohio, with whom I had the pleasure of seeing the patient, may prove interesting. I give his paper as read before the Cincinnati Medical Society, March 1, 1887.

"H. T. L., physician, æt. 30, fairly nourished, habits good, bowels regular, subject to sick headache every three or four weeks, inveterate smoker (two cigars daily.)

About August 1st, 1886, noticed that tongue and roof of mouth was sore. Supposed it was due to smoking a pipe; examination showed several white patches on mucous membrane of hard palate, one on the apex, and one on the base of the tongue.

They were irregular in outline and but slightly elevated. They were also in close apposition with the epithelium, the papillæ being exposed where they were torn loose.

The slight congestion accompanying these patches caused a burning sensation.

Stopped smoking and applied solution of boric acid for one week, but no improvement; changed treatment to application of tannic glycerate for one week. Condition continued to grow worse. Solution (1.500) of bichloride of mercury was then applied for a few days without any change. A five per cent. solution of argenti nitras was then applied for three weeks. Condition at the end of this time very much worse.

There was now inability to masticate solid food, owing to the excessive soreness of gum and palate. Careful examination revealed the presence of another aphthous patch upon the tongue —making in all three—each as large as a nickel, and a large patch on the gums at either angle of the lower jaw, two small patches on lower lip and several nodular patches on each cheek.

The secretions of the mouth gave a neutral reaction.

Whenever the mucous membrane became abraided, the fungi lost no time in attacking and developing upon it, they having the faculty of reproducing themselves upon being detached.

It is no wonder that the mouth should be a favorable location for parasites when we consider that it is the principal channel through which food, air and water enter the body, especially when the secretions are abnormal or there is some gastric disturbance. The normal saliva being virtually a parasiticide does not allow them to enter unmolested.

Mr. Gruby, in 1852, was the first to show the true nature of this fungus. It being named by him *Aphthaphyte or Cryptogame du muguet.* It was aftewards called by Robin *Oidium Albacans* and referred to the genus Oidium. ("Hist. Nat. des Vig. Parasit," 1853.)

Mr. Clark says, (Disease of Tongue, page 85, London, 1873,) 'that it forms delicate horizontal filaments which are apparently homogeneous in structure and from which short articulated pedicles take their rise. The uppermost cells of these pedicles become expanded into oval bodies which fall off, germinate and become new filaments. It is generally found growing in tangled masses like minute bunches of mistletoe, mixed with the débris of scattered spores, cells of leptothrix and epithelial scales.'

About September 1st (or five weeks from the time it was first noticed) the treatment having failed to give the least benefit whatever, I decided to resort to some form of treatment that would be more heroic. This was done by applying the solid stick of nitrate of silver every other day, or as often as was necessary, to keep up a continuous sloughing of the mucous membrane and all parasites that it might reach.

Within a week there was a marked change for the better in all patches, except those which were nodular and somewhat elevated upon the cheeks.

These were removed with the scissors and their remaining cavities thoroughly cauterized.

So far there has been no return of those treated in this way.

There have been times when there was not existing any slough, but the surface treated with the caustic was not allowed to become entirely healed.

Improvement has continued until there is now to be seen but two very small patches upon the palate, each near the posterior molar and one at either angle of the jaw.

The one upon the apex of the tongue is almost indistinct, not (as might be supposed) due to any application of the stick caustic, but to coming in contact with the palate after it had been treated with the caustic.

During all of this time the patient has paid strict attention to his diet. He being a physician could more fully appreciate the importance of what might otherwise be considered]valueless in the treatment of such an obstinate disease."

THE SIXTH YEAR MOLAR.

BY W. H. HALL, D.D.S., MARTINS FERRY, O.

[Read before the Ohio Valley Dental Society, held at Steubenville, Ohio, July 2, 1888.]

THIS, the first permanent tooth to appear through the gum, "is not unlike the temporary teeth in that it has its origin in and from the primitive dental groove," (Garretson,) where the temporary teeth are germinated. About the fourth month of fœtal life the papilla, or germ of the sixth year molar, appears; eruption taking place about that period in life indicated by its name. On account of its early development and eruption it is generally neglected, its relation to the permanent set being not understood.

Dr. Woolley compares this tooth to a waif, or outcast in the street, neglected through ignorance of its value. To the dentist the points of difference between it and the temporary teeth are readily distinguished, but we often hear the patient say, "that is one of my *first* teeth," which we readily grant, but it is nevertheless a member of the permanent set and if lost will not be replaced. This latter statement often causes great surprise to fond parents who would be unwilling to bring to the altar of sacrifice a *permanent* tooth. Just at this point the patient should be given a practical lesson in dentistry, and until we have popular education on care of the teeth, we must do missionary work on our individual responsibility, improving every opportunity. Because little or nothing is done for the sixth year molar before necessity compels professional attention, we are often puzzled to know what to do—extract it or not extract it, that is the question. It is absurd to say a general rule covers the ground. The circumstances vary with the age of the patient, the structural condition and arrangement of the remaining teeth, all aid us in making an intelligent and wise disposition.

Dr. Andrieu, of Paris, in a paper on the above subject, read before the Dental Section of the International Medical Congress, at Washington recently, held that "the sixth year molar being in development, eruption and structure, an organ of transmission from the temporary set to the permanent, it should be extracted when the permanent teeth are in position. More room is gained thereby and a longer period of usefulness insured to those remaining." This is French, you know, imported, but I am willing to believe extremists do not always follow their own doctrines. Granting the two points concerning development and eruption, we will note one point, viz.: *structure*, and show that the permanent molars cannot be classed with the temporary teeth. Even in external appearance they give evidence of being more dense and more enduring in structure, but it is proven by analysis that the permanent teeth contain a larger amount of inorganic material and a less proportion of organic than the temporary teeth.

Prof. Frank Abbott said he could see no difference in structure between the sixth year molar and the other permanent teeth under the microscope, but a very marked difference was apparent between that and the temporary teeth. Wedl makes the following report of examinations of specimens of four deciduous and ten permanent teeth as to density: "In the former the density varied from 1.09 to 2.17; in the permanent teeth the variation was between 1.98 and 2.53. The difference between their extremes being .89 and .36 in favor of the permanent teeth.

At one time it was the practice to save all the first permanent molars, but we are not willing to accept that doctrine unqualified. I will consider briefly three different stages only, when we may be called upon to decide the destiny of this tooth. First, that period just prior to the eruption of the bicuspids; second, after the eruption of the second bicuspids and just prior to the eruption of the second molar; third, after the complete eruption of the second molar. The importance of preserving the sixth year molar till the first period is passed cannot be questioned. Extraction before this time would be a serious disturbance to the progress of the development of both bicuspids and an interference with the regular formation of the alveoli and symmetrical outlines of the maxilla. The second stage demands study and the exercise of our best judgment. If the molar can be saved for years of future usefulness it should be filled, but if the other teeth give evidence of poor structure, its period of usefulness does not extend beyond the eruption of the second molar. It should be extracted to allow the second molar to move forward and occupy the space, thus affording more room for the third molar which will consequently be a better tooth. There is danger of the bicuspids separating, falling back and even turning partly around, thus destroying the articulation if the molar is extracted too soon. In the third stage, preserve the tooth if possible, extract under protest. If extracted a large masticating surface is lost, perhaps in a double sense, because the second molar will tilt forward, thus presenting only the posterior edge or a corner to articulate, leaving practically no masticating surface. The sixth year molar sometimes appears as a puzzling factor in cases of irregularity; however, I would not hesitate between a sound bicuspid and a decayed molar, to extract the bicuspid, provided the molar could be saved. With its broad masticating surface, the molar is of more value than the bicuspid, and would save much derangement of the articulation in regulating. Finally, we must preach and teach, to enlighten our patients concerning the true relation and worth of the sixth year molar; and our further duty is to operate on this tooth by filling, or with forceps tempered with wisdom and good judgment.

ILLINOIS STATE DENTAL SOCIETY.

[Reported for the Ohio Journal of Dental Science by "Mrs. M. W. J."]

(*Continued from page* 383.)

Thursday morning was devoted to clinics, beginning at 8 A.M. **Dr. Carroll** opened the flask, for the examination of the aluminum casting made at the clinical lecture. This was found to be perfect in every respect, and very thin and light. Dr. Carroll then demonstrated practically all the steps of his method, to an interested class of attentive listeners.

Dr. A. W. Harlan treated a typical case of pyorrhœa alveolaris involving one of the right superior bicuspids, and all of the lower teeth, which were heavily incrusted with deposits, the gums swollen and inflamed, with pus exuding around the necks of the teeth, a case of probably fifteen years standing. After removing the deposits, he treated with peroxide of hydrogen followed by a ten per cent. solution of resorcin. The final treatment with iodine trichloride, the newest and most powerful remedy now employed.

Dr. J. Austin Dunn was treating an alveolar abscess of the first superior bicuspid. The broach would not pass through the canal, but with his medicinal syringe he forced a passage, and the peroxide bubbled freely from two fistulous openings, one on the buccal and the other on the palatine surface. After exhausting the pus flow, he treated with three or four drops of eugenol followed by warm diluted listerine, following this with bichloride of mercury, he then filled the root canal with gutta-percha cones.

Dr. Ames, Chicago, demonstrated the method of working copper amalgam, heating the requisite quantity in an iron bowled spoon till free mercury appears on the surface, then rubbing it in a mortar till plastic, washing in alcohol till thoroughly clean and squeezing in a piece of strong silk till of the right consistency; he removes a portion that is very plastic for commencing the filling; old scraps can be used over again indefinitely, improving with manipulation; care must be taken not to overheat.

J. S. Coyle, St. Louis, had on exhibition a new series of dies for stamping gold crowns from coin gold.

Dr. J. J. R. Patrick also had his gold crown apparatus, and crowned a first right inferior bicuspid.

Dr. Brophy filled the posterior approximal and grinding surface of a right superior second bicuspid, filling to the cervical border with tin and gold and finishing with all gold, using his continuous band matrix and the Detroit Co.'s electric motor.

Dr. J. G. Reid, Chicago, made a tin-and-gold filling in the anterior approximal cavity of a superior first permanent molar, using semi-cohesive gold, annealed, and using the new Belding Co.'s motor.

Dr. E. D. Swain, using William's cylinders, annealed, made a large filling in the anterior approximal surface of a right superior bicuspid.

At the 2 p.m. session, on motion of Dr. A. W. Harlan, a committee was appointed to draft a petition, or memorialize Congress, for the removal of duties on dental materials and appliances.

A resolution was offered, but lost after some discussion, petitioning the State Legislature to relieve dentists from jury duty.

Dr. Crouse said that he had always been relieved on the ground that he was a surgeon; being now recognized physicians, and physicians being exempt by law, there was no necessity for agitating the question.

Dr. W. B. Ames, Chicago, read a paper on

AMALGAMS.

This was not an argument for the claims of amalgam as a filling material; it was a consideration—not of the virtues of the material, but of its manipulation; the results of a series of experiments with the different metals employed in compounding, of which a few points only are here given. But little has been brought out since the investigations of Dr. J. Foster Flagg.

If amalgams are heavily trimmed we get bulging; if copper is used there is little change of form; crepitation in manipulation indicates silver; the addition of gold to an amalgam only serves to make it dirty, though pure gold and mercury is clean and white; silver and copper control change of form by being partially amalgamated, the solid particles offering resistance. In an amalgam of precipitated copper and mercury there will be many solid particles of copper with an amalgamated surface which prevent the change of form which would occur in a homogeneous mass. Amalgamated platinum is of unsightly color and remains indefinitely plastic by itself; yet when incorporated with other amalgams imparts very desirable qualities, especially toughness and edge strength; it has an unctuous buttery feeling and draws out like gum, wholly different from anything else. Palladium precipitate gets hard, with a gray, rather than black color, it sets too quickly alone, but hastens the hardening of others; to produce a very hard surface it can be rubbed in on the surface of a filling of ordinary amalgam with good results, and with the color of clean fractured steel. In the use of pure copper amalgam, the rapidity of setting can be regulated by manipulation, as the more it is rubbed and freed from mercury, the more quickly it will set; the color is improved by thorough washing with alcohol, dissolving out the oxides till it gives a steel gray color; this should not be done for teeth of very poor structure, when the therapeutic effects of the salts of copper are desired.

Dr. Ames also gave the history of a series of experiments by which he reached the conclusion that it is a delusion to suppose mercury volatile, or that the mercury in fillings can have any effects upon the system.

As to the electro-chemical theory, he could not recognize any danger from that source: on the contrary, electrolytic action might liberate nascent oxygen and sulphur and so aid in destroying micro-organisms; there might be acids from decomposition after decomposition, but this would be on the surface of the metals and not on tooth structure.

Dr. Chas. R. Taylor, Streator, who was appointed to open the discussion of this paper, said that he had not had the opportunity either of testing the experiments or of studying the paper. He thought that amalgams had their limitation in the fact that all metals in the fluid state have a tendency to assume a globular form; another limitation was found in their color, and still another in the lack of edge strength. The only objection to copper amalgam is its refusal to harden sometimes, which he thought probably due to over-heating. Success in the use of amalgams depends largely upon the shape of the cavity; the edges should never be beveled.

Dr. Johnson thought that tin-and-gold could be used to greater advantage in many cavities usually filled with amalgam.

Dr. Garrett Newkirk thought it was not so much the kind of amalgam used as the way in which it is used; there is a great field open for copper amalgam, and for silver and tin. Amalgam must remain undisturbed until it has set; its value is otherwise seriously impaired, especially at the margins. If it is a large compound filling, there must be an artificial wall to hold it in place. For this purpose he uses a matrix which is left in place till the patient returns the next day. This he cuts from a strip of copper rolled thin, and fitted around the tooth and soldered. This is a wonderful assistance in packing amalgam, which can be packed in dry and even malletted. The copper being soft, the filling can be contoured by crowding the matrix out. It can be consolidated as thoroughly as gold, and at the subsequent sitting finished with disks and strips and finally polished like a gold filling. He had his doubts whether copper has a healthy effect in the mouth.

The report of the supervisor of clinics gave rise to an animated discussion as to the value of clinics, the value of the report, what such a report should embrace, etc.

Dr. Crouse thought a mere catalogue of the operations performed of no benefit to any one.

Dr. Cushing said that by the provisions of the constitution it should be a criticism of the operations made, and a report of the condition of operations made in previous years.

Dr. Pruyn thought criticism of the work of invited operators should not be made the duty of those issuing the invitation and making arrangements, etc., this should be the work of another special committee.

Dr. Crouse thought the hypodermic injection of cocaine witnessed, much more severe than the extracting itself.

Dr. Sitherwood thought cocaine operators were taking great responsibilities, in view of the fatal results of the "cocaine habit" on record. He thought that in many of the cases when the matrix is used the cavity could be filled while the matrix was being prepared and put in position.

Dr. Morrison, who replanted a molar which had been extracted (with cocaine) by Dr. Pruyn, said that the alveolar border was badly lacerated, and that if the operation was not a success he should attribute the failure to the effects of the cocaine upon the tissues. He considered the use of cocaine for extraction a total failure. He does not believe in the use of the powerful remedies in vogue.

Dr. Crouse did not want a matrix in his way. He would use gold in the old-fashioned cylinders rolled on a broach and inserted on the wedging principle, where others advocated tin and gold, or copper amalgam because of moisture; he was ready to operate against any man and beat him on time.

In one of the clinics with cocaine, marked toxological effects supervened. This roused severe adverse criticism, but Dr. Pruyn said he was glad to have an unfavorable case, which he had recognized as such before operating, as it gave an opportunity for exhibiting the combatting remedies.

Dr. Freeman said that in many cases we see only the temporay results while the final results may be very serious. As a local obtunder he uses crystals of menthol, alcohol, and a little chloroform with very good results.

Dr. Moody, Mendota, thought tin and gold invaluable both for the purses of poorer patients and for the health and strength of the operator, many of whom packed in both soul and body with their gold.

Dr. J. D. Moody, Mendota, read a paper entitled

SOME MAIN POINTS TOUCHING THE CONSERVATIVE TREATMENT OF TEETH WHEN PULPS ARE NEARLY OR QUITE EXPOSED.

He said that when the tooth is of faulty organization, white and chalky, with a leathery mass of disintegrated dentine in the cavity, an immense metal filling would be incompatible; our effort, however, must be to preserve the pulp without the destruction of tooth substance. In some cases such a tooth can be filled with the happiest results by flowing in oxyphosphate of zinc, but this will not always arrest decay; many cases will require constitutional treatment, and we should endeavor to get at the causes of this frail tooth structure. Fillings must be non-irritating, moisture excluding, and compatible with such tooth structure. This is found only in the cements and in gutta-percha. The rubber dam gives a source of security in operating; the defective dentine should be removed cautiously leaving a layer over the pulp, and the cavity lined with gutta-percha to the margin and finished with cement, varnished with sandarac. This may be left in from six months to two years, or as long as in good condition. At the end of that time the tooth will usually be found hardened, the pulp will have lost its sensitiveness or have seceded and metal filling can be rapidly inserted. Where there is a low grade of pulp inflammation the use of the mallet is sufficient to bring about a fatal termination.

Dr. Moody did not approve of the recommendation given in the *American System of Dentistry* to varnish with mastic before applying oxy-phosphate, as this would preclude the therapeutic action of the latter.

Dr. Moody finished his paper by quotations from Dr. W. B. Miller (Berlin) found in the *Independent Practitioner* for 1885, page 60, which he considers misleading and contrary to his own experience in every particular.

(To be continued.)

REPORT OF THE UNIVERSITY VISITING AND CONSULTING COMMITTEE.

[Read before the Michigan State Dental Association, held at Ann Arbor, Mich., March 20, 1888.]

The U. V. and Con. Com. was constituted to operate as a medium of communication from the Dental Department to the profession, and from the profession to the Department receiving and offering suggestions that may be of value to each.

The money appropriation that is devoted to teaching the large number of students now present is but $8,000 per year, wholly inadequate to meet the demands of 105 students.

A little over $5,500 in fees and receipts from clinics will be turned into the treasury of the University this year from the students of this department, and it would be no more than justice that a pro rata share of the funds from the general treasury should be turned over to the department for running expense in addition to the $8,000 appropriated by the Legislature. But, on account of the department being by original enactment but an experiment in the way of a special school, it is argued by the Regents that we should confine our expenses within the limit of the special appropriation.

The number of students here for instruction makes the room and facilities wholly insufficient to give them that instruction that the standing of the institution aims to insure, and something ought and should be done by the profession to correct the disadvantages that the faculty are laboring under.

To do justice to the students, department, faculty, and profession, more and convenient room should be provided and at least two or three assistants to bear a share of the numerous duties now imposed upon the same number of teachers that were counted no more than sufficient for twenty students in attendance at the organization of this department in 1875.

In view of these facts it is suggested and urged that each member of the profession in the State constitute himself or herself a committee of one to urge upon the member of the Legislature from their district the very great necessity of an extra appropriation for their department and the putting of the school upon the general list of departments, and thus extricate it somewhat from its present isolated and cramped condition as a special department dependent solely upon its special appropriation for life and sustenance. This change to the same footing as the other departments would give it a claim on the general treasury for support and maintenance. It can be argued with perfect faith and truthfulness that it is no longer a probationary appendage and experiment, but should be adopted into the University as a fixture an integral part of the whole. Each one of you should make it your business to so impress your Representatives at Lansing with our views upon this subject, that when the matter of appropriation is again brought up at the next session of the Legislature your wishes will have some weight in the amount of money supplied.

It is also suggested for your consideration that one of the requisites for graduation in this department shall be a three years course of nine months each so as to get the best class of students, impart better and more instructions and conform to the rules and requirements of the other departments of the University.

Letters are being constantly received by the faculty from practitioners throughout the country asking if a post-graduate course can be pursued here, and the answer has to be invariably returned that the facilities and accommodations will not permit of such a proceeding.

At present there are no dental institutions in the country that give to practitioners the means of brushing up on modes of operating that are continually being brought forward for the advancement of our science, and Michigan University should take the initiative step in the establishment of a post-graduate course, but under the existing limited appropriation and restricted accommodations such a thought can hardly be entertained for a moment. Think of this, too, in your argument with your member, all of which is respectfully submitted.

L. L. Davis,
C. B. Porter,
J. B. McGregor.

On motion the report was accepted and adopted.

The Board of Directors through the Secretary offered the following resolution:

Resolved, That Dr. C. H. Land be and is hereby expelled from the Association for his declaration of antagonism to the Code of Ethics and his persistant violation of the same.

On motion the report was accepted.

Editor's Specials.

"Write the Vision and make it plain."

DENTAL PERIODICAL LITERATURE.

Exactly how to conduct a dental journal is a thing "no fellow can find out"; and even if some fellow could, he would not likely have anything to do in journalism, or if he should, he probably would not conduct a journal according to his best knowledge and ability. But suppose that he, with his perfect knowledge of the matter, should "give his whole mind to it," and produce a perfect specimen of periodical literature, he would have but a small list of subscribers, and, hence, but a limited advertising patronage. For it is almost certain that our profession is not yet ready for perfect literature.

If we think of our profession as an army, we recognize the journalists as self-detailed for picket duty. And every man in camp has a right to expect and demand from the pickets the strictest attention to duty. The pickets *must* watch, though others sleep; and they don't fret at being held to a strict accountability.

And the publishers and editors of professional periodicals should not object to criticism, nor should they fail to give respectful attention to friendly suggestions. We don't yet know all; and if we did, the fact possibly might not be universally recognized at once; and one not yet informed as to the perfection of our attainments must be forgiven for a little criticism. Pickles and spices improve the bill of fare, and sharpen the appetite. Legitimate criticisms are quite as appetizing and refreshing in their way, and we enjoy them with as true a relish. And hence we have enjoyed reading, in the transactions of the Illinois State Dental Society, the report of the Committee on Dental Science and Literature and the criticisms thereon, as hinted at and set forth in *The Dental Review.*

We learn that the report states "that the lack of originality in dental periodicals was unusually prominent"—(for the past year, we infer, but do not know if the lack is unusually prominent, as compared with previous years, or as dental compare with other professional periodicals. But let us study on this, brethren). The report goes on to say that "much reprinting is done," and then it gives good advice to the profession as to proper patronage of the periodicals by purse and pen; and all the periodicals say amen.

A good member suggests there is "too much rehash in our dental journals, too much reprinting, and in fact, too many publications." All of which we may steadfastly believe, and yet fail, unless he and his brethren teach us how many publications there ought to be, and which ones, beside the OHIO JOURNAL, should be allowed to continue. And then, if they would kindly suppress the others, all would be lovely.

And the profession can do all this without jar or discord. If our friend, Dr. Sitherwood, and all his brethren *would* turn their attention to their favorite periodicals, and write them up in proper style—furnish them with good original matter—they can stop the "rehash"—crowd it out in a month; and, the "survival of the fittest" will determine the ones to be kept up, and those to be suspended, if there are too many. And the brethren can well afford this for the good of the cause, and the benefit of the race, and it will require no greater sacrifices than are regularly made by most, if not all who are responsible for dental periodicals.

But the creamy criticism comes from our alphabetical brother Patrick: "Dental journalism falls very much short of accomplishing its work," says J. J. R. P., which is true of the dental profession as well, and of the human race, perhaps. Further, he tells us: "The journals will publish anything and everything that is sent to them." Has he seen all the "waste baskets?" Or is he like the man who claimed that a crow will live two hundred years, for he had tried it twice? He also reiterates the charge of copying from each other, and claims as a result that he "can read from all the journals what is worth reading in about one hour." It is possible that reading is as rapid as cholera in some constitutions; but a school-master of pioneer times would enjoin a "minding of the stops."

But these charges are all trivial; but here is the serious one: "Dental societies all over the country permit journals to make reports of their proceedings and then dispose of them to the subscriber. The subscriber pays for what the publishers take or get for nothing. There is here room for much improvement." This principle has a wider application. Dental societies permit members, invited guests, and even stray dentists, to attend their meetings, and gain all the new and useful ideas they can from the proceedings, enabling them to greatly improve their methods of practice, and then dispose of these to their patrons, properly charging higher fees than they had a right to before gaining these higher attainments. Thus the patients pay for what the dentists take or get for nothing. Is there "here room for much improvement?" Cannot all this be prevented by excluding reporters, visitors and spectators, and all becoming *nostrum* venders and yankee tinkers? Then one small quarterly would supply the need, and it would not be tempted to copy.

The man who has received more thought from his profession than he has given to it is in debt, and should pay up. And if all such would do it, the periodicals would overflow with original matter.

CRYSTALLOID GOLD.

This preparation of gold recently placed on the market by Mr. R. S. Williams, of New York, is receiving much attention from the profession at the present time. We have recently given this gold our attention and tried it in cavities of various kinds and shapes. It certainly has qualities not found in any of the other preparations. The ease with which it can be manipulated, the property of spreading laterally, and the tendency to remain where placed, are features that alone make this gold a superior filling material. It is thoroughly cohesive, and can be packed very rapidly with either the use of the mallet or hand pressure. No retaining pits or grooves are needed, only a proper undercut in shaping the cavity is required, making it an excellent material for filling shallow cavities, and for starting all classes of fillings. It gives a smooth finish, with good edges, and hard surface with no tendency to flake or scale. Teeth filled out of the mouth by both hand pressure and with the use of the mallet, show a wonderfully perfect adaptation to the walls of the cavity. So far we have been much pleased with the gold, and if it proves to be durable it will certainly be a long step in advance toward the ideal filling material. B.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 513 Jefferson St., Toledo, O.]

To Fasten Air Chambers.—Metal air chambers can be fastened to the model with great security and ease, with oxyphosphate cement.—*Prac. Dentist.*

Using Iodine.—Dr. W. A. Johnston says: In using iodine for counter irritation, do not use a steel instrument to apply it; wind a little cotton on a match-stick, and you will use iodine, not iodide of iron.

The Use of Powders.—A small, pointed insufflator furnishes the best means of blowing powdered medicines into root canals or into the "pockets" around necks of teeth, left by the removal of tartar.—*So. Dent. Jour.*

When to Extract the First Permanent Molars.—Dr. Watling says: At from nine to twelve the first lower molars may be extracted with assurance of the space filling up and the uppers up to the fifteenth year of age.

To Remove Water from Alcohol.—If gelatine be suspended in ordinary alcohol it will absorb the water; but as it is insoluble in alcohol that substance will remain behind, and thus nearly absolute alcohol may be obtained without distillation.

To Remove Nitrate of Silver Stains.—Dip the fingers into a strong solution of cupric chloride. In about a minute the silver will be converted into chloride, and may then be washed off with hyposulphite of soda solution.—*Chemist and Druggist.*

Destroying Pulps.—Dr. W. A. Johnston says: The best method of destroying pulps is to relieve the pain, remove the blood clots and coagula, and apply arsenic one part, hydrochlorate of cocaine four parts, and lanolin five parts, allowing the application to remain 24 hours.

Composition of Crown Materials.—The following are formulæ of Dr. Patrick's, used by him in his method of making crowns: Band gold—pure gold, ½; coin gold, ½. Plate for cusps of crowns—pure gold, 15 parts; platinum, 1½ parts; to be kept at the fusing point one hour. Solder—band gold, 89 parts; silver, 7 parts; copper, 4 parts. A lower grade of solder for filling the cusps of crowns is composed of solder (the above), 89 parts; silver, 7 parts; copper, 4 parts.—*Dental Review.*

To Repair Mandrels.—A good method of repairing worn-out disk mandrels is to place the screw flat upon a small anvil and strike it a light blow with a hammer, so as to flatten it slightly, when the screw will once more hold as perfectly as before. Another point which will be well to observe, with *new* as well as old mandrels, is to countersink the screw hole in the mandrel, as the screw is always imperfectly cut near the head.—W. G. Stowell in *Dental Review.*

Cutting off Teeth.—Dr. W. T. Martin says: A rapid and easy method of cutting off teeth preparatory to mounting crowns, is to open into the pulp canal, then with a sharp oval bur, revolved by the engine, cut from within outward on the line with the gum margin, rotating the hand piece, so as to cut as equally as possible in every direction from the pulp canal. Most of the after work on the end of the root can be done more rapidly with this bur than with stones.—*So. Dent. Jour.*

Rubber Cement.—The ordinary rubber cement which is so much used by fine shoemakers is made by dissolving a quantity of gutta-percha in chloroform or carbon disulphide until the solution has the consistency of honey. Thin down the parts to be cemented, then spread a small quantity of the cement well over the parts to be joined. Warm the parts over a flame or fire for half a minute, bring the surface to be united together, and hammer well or clamp firmly. The cement dries in a few minutes.

Combining Amalgams.—I notice that some of the prominent members of the profession claim absolute non-union between the copper and other amalgams. I have placed copper amalgam in the mouth, and topped off and contoured with a quick-setting amalgam, and obtained the most satisfactory results. The copper makes an excellent lining for sensitive and deep cavities, and when topped with a quick-setting amalgam we have a most perfect preserative filling. I have experimented with three different kinds of amalgams, or alloys, in union with copper amalgam, in glass tubes and otherwise, and found absolute union.—Dr. H. M. Clifford in *Ind. Prac.*

Safe-Edge Stump Corundum Wheels.—In the process of grinding the sides of teeth which are to be capped for bridge piers, the gum is liable to be wounded by the edge of the corundum wheel, but if this is covered with a smooth tire or band of metal, the wheel will cut only upon its sides, and leave the gum unharmed. A similar safe edge may quickly be given to any grinding wheel by simply melting a little shellac with a hot iron on the wheel edge while it is being rapidly rotated. As the wheel becomes worn upon its sides, the metal or shellac band may be turned off with a sharp or hot tool, to give the wheel sides a grinding contact with the tooth sides, and yet preserve the gum or tooth neck from injury.—T. A. Long in *Cosmos.*

An Easy and Substantial Method of Replacing a Tooth on Vulcanite or Celluloid Plates.—Select a tooth with long and large headed pins. Drill a hole through the plate from the lingual surface to a point opposite the pins in the tooth, when in proper position, and large enough to admit both pins. Note the point where the head of the pins touch after the tooth has been placed in position. Remove the tooth and with a wheel-bur cut small niches a little in advance of the point where the heads touch. Replace the tooth, and with a suitable instrument spread the pins apart and into the niches, which being a little in advance, will draw the tooth closely to the plate. Countersink the hole and fill it with amalgam.—Dr. Morgan Adams in *Archives.*

Cause of Failure in Capping.—Dr. G. S. Allan says: I believe that fully one-half of the failures after exposure are due to infection at the time of exposure, if the case be one of instrumentation. The moment I expose a pulp I touch it with bichloride of mercury solution, and afterwards seal it up with ether and rosin as a protective coating.

In opening into cavities my first act is to sterilize the cavity with a $\frac{1}{5}$ of 1 per cent. solution bichloride of mercury, and then take every care not to force any of the contents of the pulp chamber through the apical foramen. I invariably dip my barbed points in the bichloride solution, as also all instruments used in removing dead pulps. I use the same precaution in the treatment of exposed pulps.

Adapting Rubber Plates to the Mouth.—Dr. Southwick says that a plate vulcanized as is the usual custom is apt to contract at the heel in cooling and in consequence does not fit the mouth properly at that place. In flasking a piece he bevels his model and soaps it slightly, thus making it easy to remove from the investment after vulcanizing. After so removing a case on the model and carefully separating the plate from the cast, he replaces it and holding the plate and model over a spirit flame, slowly heats it up to 320° F. with the result that the plate and cast are brought snugly together. Removing from the flame he allows it to cool during which time he holds the heel of the plate in close contact with the model, the result being that the contraction simply raises the plate from the model at the centre, thus forming a good air chamber.—*Dental Review.*

TEA AND TEETH.—In the cities of the United States, where tea is consumed in much smaller quantities than in this country (England), the teeth decay more rapidly than with us. The climate, the many indigestible articles of diet, the extreme nerve-tension of the Americans, and other causes affecting the nervine and general health of that great people, tend to induce a dyspeptic condition which always seemed to me to be largely responsible for their premature dental decay.

At the same time there can be little doubt that the white bread and tea (a common though defective staple diet of too many of our own population) is a frequent cause of gastric trouble. Next to tea, alcohol, by its depravity of the digestive apparatus, has always seemed to me to interfere with tooth nutrition and soundness.—DR. NORMAN KERR, in *Brit. Med. Jour.*

SHARPENING HYPODERMIC NEEDLES.—A fruitful cause of abscesses in hypodermic medication is dull and rusty needles. The rust may be avoided by wiping the needles from time to time with rouge or crocus cloth, purchaseable from any cutlery or hardware establishment. The finest emery cloth is too coarse for this use. Every physician ought to be able to sharpen his needles himself. The best hone for the purpose is that known as the Hot Springs or Washita razor hone. Thrust the needle with the wire in it, through a bit of soft velvet cork long enough to come within a quarter of an inch of the commencement of the bevel point of the instrument. The cork will serve as a handle for the fingers and at the same time holds the needle stiff and taut. It is also a guide in preserving the proper bevel of the point. A few light rubs upon the hone will put a keen point on the dullest needle.—*St. Louis Med. and Surg. Jour.*

REPLACING TEETH ON RUBBER PLATES.—Where broken teeth are to be replaced by new teeth, cut away the necessary space on the lingual surface of the plate, grind the new teeth to fit as wanted, then apply coal oil to the space on the plate where new rubber is needed—next fill the space with a thick chloroform solution of rubber, and immediately press the new teeth to the place they are to occupy. Flask in bottom section of flask, covering teeth and plate with plaster, only leaving uncovered the space on lingual surface, filled by the new rubber. After the plaster has set, press into this space pieces of sheet rubber with sufficient force to spread the solution previously applied into all parts of the space. Finish the new rubber thus introduced, as smoothly as possible, using a moderately heated spatula. Now proceed as usual. This plan is merely packing in the new rubber, before pouring the plaster in top section of flask, and is applicable to many cases of repairing.—*So. Dent. Jour.*

To Control Hemorrhage.—Dr. Otto Arnold says: In all hemorrhage in which the bleeding vessels are to be reached through the circulation, gallic acid is the most efficient, as its chemical affinities do not afford the impediments to its absorption as those of tannin, etc. My favorite prescription is:

℞.	Gallic Acid,	ʒ i
	Aqua Cinnamon,	℥ ii

Sig. Tablespoonful every hour until bleeding is arrested.

Two or three doses usually suffice to produce a clot and all trouble is then over.

In connection with the above, the tooth socket should be gently but securely packed with tannin. For this purpose I use a saturated solution of tannin in water, saturating a pledget of cotton in the solution, and packing it firmly into the socket.

Persulphate of iron, either in solution or salt, should positively be discarded from the list of styptics, as unreliable, on account of the frail clot in produces and the tendency to secondary hemorrhage following its use.

Treatment of Pyorrhœa Alveolaris.—Dr. G. S. Allan says: In the treatment of pyorrhœa alveolaris, antiseptic treatment comes in very happily. My first object is to remove the accumulation of tartar as well as possible with "cold steel," and then pass up around the root a sharp pointed stick saturated with a solution of 1 part pure sulphuric acid to 35 parts of water. This is sufficiently strong to dissolve the tartar, but does not injure the gums or soft tissues.

Dr. J. Truman says: I use sulphuric acid—not the aromatic, but the commercial form, in the treatment of pyorrhœa. I do not allow it to remain long upon the gums, but follow it up with bicarbonate of soda, which, by its effervesence, throws out the débris better than peroxide of hydrogen. Pyorrhœa is caused by micro-organisms, and must be treated in an entirely different manner from serumal deposits.

Dr. H. C. Kirk says: I have had very satisfactory experience with chloride of zinc in a number of bad cases of pyorrhœa, using it in the strength of from 2½ to 3 grains to the ounce.—*Ind. Prac.*

Little Rubber and Impression Cups.—Dr. G. A. Bowman says: Cut a common hollow rubber ball, of any size desired, in twain, and you have cups—twins—which have no equal in which to mix small quantities of pastes, plaster and polishing materials of all kinds for use at the chair or work-table. They cannot be upset, are easily cleaned and always ready.

From a No. 16 lower impression cup with acute angles, cut off about an inch from the posterior ends. The anterior part can be used for taking impressions of the anterior teeth, superior or inferior.

The posterior ends are to be perforated in the center of bottom. From sheet brass or copper cut handles of suitable length and width, perforate one end, and with a small copper rivet and washer unite them to the cup, riveting on the under side. This cup will revolve on the rivet, enabling you to take any impression of two or more teeth situated anywhere in the arches above or below, at any angle—invaluable in crown and bridge work—perforate the sides of the cup to retain the impression material. All can be nickel-plated, and when finished has cost but a trifle in time and money, but will save both in the using.—*Archives.*

The Surroundings of the Dental Chair.—These are too often monotonous, if not unpleasant, or positively disgusting. The wall is bare, dingy and spotted, spider webs are in the corners, the window is dirty, and the look outside is offensive. The floor is not well covered and clean, the wall paper is cheap and old, the paint needs renewing, and the atmosphere is musty. A multitude of horrid instruments are in full view, the spittoon is unsightly, if not filthy, soiled napkins are in sight, and there is a dusty and unkept appearance in every direction.

How easy to keep most of the instruments hidden, and to have those that must be used, bright and clean; a beautiful spittoon does not cost much, and it costs little to keep it clean and sweet; there is no excuse for dirty napkins to be in view, or anything else that is dirty. Of all places, the dentist's room, especially the surroundings of the chair, should be attractive and free from offensive odors. It should be as inviting in every way as possible. A nice, clean napkin under the few polished instruments that must be used is a pleasant relief. The chair itself should be a perfect ornament. To have the instrument case attractive, the swing tray beautiful, and little ornaments and pictures nestling about to catch the eye of the patient, as the head is turned here and there, is appreciated.—*Items.*

To Polish the Palatine Surface of a Plate.—Dr. C. C. Everts says: It is just as important for the palatine surface of a plate to be smooth and polished, coming in such intimate contact, as it does, with the delicate mucous membrane, as the other surface. I have found the following method the best and simplest, all things considered: Always add the plaster, (a little at a time, stirring constantly,) to the water, not the water to the plaster. After getting the impression, (always taken in plaster,) give it a coat of shellac varnish, not too thin, and while it is drying run a ring of sheet wax around it, an inch or so deep. After the varnish is perfectly dry, instead of oiling, sprinkle powdered French chalk freely over the impression, then with a soft brush —I use a badger's-hair shaving brush—rub every part of the impression thoroughly, finally shaking out the surplus; then mix the plaster pretty thin, and pour, tapping the cup gently until the plaster commences to set. After it has hardened and you have cut away the impression, you will find the cast to have a perfectly glazed surface, free from air bubbles. Now proceed as usual and when the wax is removed dust the cast with chalk the same as you did the impression. You will find after the plate is vulcanized, all that will be necessary to have a beautifully polished palatine surface, will be the short use of the brush wheel.

Dental Dies.—Dr. L. P. Haskell says: The proper formula for dental dies is 1 part copper, 2 parts antimony, 8 parts tin, to be melted in the order named, otherwise the tin would oxidize badly. Melt in a crucible, and, as a high heat is needed, take it to a foundry or to a blacksmith's forge. This metal has *all* the requisites of a dental die.

For counter dies use lead with tin added to reduce its melting temperature as pure lead would adhere to the Babbitt die. Take 5 pounds of lead, 1 pound of tin, coat the die with whiting; insert partly in the sand, place a ring around it and pour not too hot. It is never necessary to use the ring in swaging.

To secure a perfect die in cases of deep undercuts in upper casts a Hawes' flask is used, but a simple method is to make a core of plaster and asbestos, equal parts. After the cast is prepared for moulding, and varnished, set it upon a flat surface and oiling the surface of the cast where undercut, apply the material, about one-quarter of an inch thick at the base, and extending it to the margin of the ridge, as far around as the undercut extends. When hard, remove and dry *thoroughly*, moulding both together and replacing the core in the mould, pour the metal. In a lower cast no other method is available, but it will need to be made in two pieces, as one could not be removed from the cast without breaking. Use oiled sand instead of moistening with water, for when once prepared it can be used many times, saving much time and often annoyance.

PAIN OBTUNDERS.—DR. WILLIAM CONRAD in the *Archives* for August presents the views of a number of prominent dentists on *pain obtunders.* Those recommended are as follows:

The Herbst obtunder (30 grains muriate of cocaine, Merks, one drachm sulphuric acid, C. P., supersaturated with sulphuric ether, Squibbs.)

Carbolic acid and hot air.

Robinson remedy.

Cocaine muriate.

Chloride of zinc.

Alcohol, ether and hot air.

Sharp excavators.

Sharp burs run at a high rate of speed with an interrupted or intermittent touch on the dentine.

DR. W. H. ATKINSON says: For children (and adults) who are unable to endure the least hurt, I carefully dress the cavity with my old favorite, equal parts of oil of cloves and creosote, covering with sandarac varnish to hold the agent in place and keep out intruders. Sometimes several dressings will be required before the work can be accomplished, but in most cases two or three dressings suffice. When upon removing the first dressing, there can usually be considerable decay removed, which affords opportunity for a better dressing.

DR. FRANK ABBOTT says: I use many things, or substances, for obtunding sensitive dentine, such as: 1st. An alkali (bi-carb. soda) to restore the parts from their extreme acid condition to a normal one of alkalinity. This will render nearly all operations upon teeth, otherwise very severe, painless. Used as follows:

Soda Bi-Carb.,	ʒij
Aqua,	℥viij

M.

For four days rinse the mouth with above every hour or two; then for the next two or three days put soda directly into the cavities of decay.

I use "Oliver's Obtundent," which, in many cases, gives almost immediate relief. Tannate of glycerine (*mixed hot*) will often relieve sensitive dentine, whether decayed or not. A few (5 or 6) inhalations of chloroform or ether will almost always render a patient insensible to the pain of excavating cavities of teeth, without producing any general insensibility. Have used these in extreme cases for the last thirty years.—*Archives of Dentistry.*

Societies.

"Wherewith one may edify another."

OHIO STATE DENTAL SOCIETY.

The fourth annual meeting of the Ohio State Dental Society, as reorganized, will be held in Cincinnati, Oct. 16, 17 and 18, 1888.

Every effort will be used to make this the best meeting ever held in the State.

J. R. Callahan, *Sec'y*, J. E. Robinson, *Pres't.*
Hillsboro, O.

NORTHERN OHIO DENTAL ASSOCIATION.

The thirtieth annual meeting will be held in Cleveland, Ohio, Tuesday, May 14, 1889, and continue its sessions three days.

The following papers and clinics will be given: 1. Dental Electricity.—Paper by Dr. F. S. Whitslar, Youngstown; opened by Drs. J. E. Robinson, Cleveland, and S. A. Pancost, Ashtabula.

2. Modern Devices Adapted to the Wants of the Operator.—Paper by Dr. J. W. Lyder, Akron; opened by Drs. C. R. Butler, Cleveland, and W. H. Whitslar, Youngstown.

3. Amalgam, its Uses and Abuses.—Paper by Dr. J. R. Owens, Cleveland; opened by Drs. W. H. Fowler, Painesville, and J. H. Siddall, Oberlin.

4. Dissemination of Knowledge of Dental Hygiene to the Masses.—Paper by Dr. L. P. Bethel, Toledo; opened by Drs. Geo. H. Wilson, Painesville, and Chas. Buffett, Cleveland.

CLINICS.

1. Treatment of a case of pyorrhœa alveolaris, by Dr. J. R. Bell, Cleveland.

2. Filling of a buccal cavity with tin, by Dr. H. H. Newton, Cleveland.

3. Filling of a lower bicuspid post. aprox. with gold and using matrix, by Dr. J. E. Robinson, Cleveland.

A cordial invitation is extended to all the profession.

S. B. Dewey, *Cor. Sec'y.*

IOWA STATE DENTAL SOCIETY.

Officers for the ensuing year are as follows: President, J. B. Monfort, D.D.S., Fairfield; Vice-President, L. K. Fullerton, Waterloo; Secretary, G. W. Miller, Des Moines; Treasurer, F. M. Shriver, Glenwood; Ex. Committee, F. R. Ross, Cedar Rapids; Jessie M. Ritchey, Des Moines; C. Thomas, Des Moines.

The next place of meeting will be at Des Moines.

G. W. Miller, *Sec'y.*

MISSOURI STATE DENTAL ASSOCIATION.

The twenty-fourth annual meeting, July 10–13, at Pertle Springs, Mo., the following officers elected for 1888–89:

President, Dr. B. Q. Stevens, Hannibal; 1st Vice-President, Dr. T. W. Reed, Macon; 2nd Vice-President, Dr. W. E. Tucker, Butler; Rec. Secretary, Dr. John G. Harper, St. Louis; Cor. Secretary, Dr. William Conrad, St. Louis; Treasurer, Dr. James A. Price, Weston.

Board of Censors.—Drs. J. B. Newby, St. Louis; A. H. Thompson, Topeka; J. G. Hollingsworth.

Committee on Ethics.—Dr. E. E. Shattuck, Kansas City; W. H. Buckley, Liberty; J. W. Whipple. St. Louis.

Publication Committee.—Drs. W. H. Eames, A. H. Fuller, G. A. Bowman, St. Louis.

Committee on Law.—Dr. James A. Price, Weston, Mo.

Executive Committee.—Drs. E. E. Shattuck, H. S. Lowery, J. W. Aikin, Kansas City.

The next annual meeting will be held the first Tuesday after July 4th, 1889, at Pertle Springs, Warrensburg, Mo.

Wm. Conrad, *Cor. Sec'y.*

Books and Pamphlets.

THE STORY OF OHIO, by Alexander Black, containing 326 pages and 37 illustrations. Published by D. Lathrop Co., Boston. Cloth, price $1.50.

This the second of the series "The Story of the States," embodies all the important historical events that have taken place in Ohio from the time of the first explorations, up to July, 1888. Unlike most histories it is not "dry," but the chronicled events are given in such a way that it is more of the nature of a charming story. Dr. Black is a fascinating writer and his droll sayings cropping out here and there cannot fail to interest the reader. The history is reliable, and coming as it does at the centennial year adds worth to the publication. Besides the regular history the book contains a chronological epitome of the history of Ohio from the time of discovery, the ordinance of 1787, the constitution of Ohio, and a list of works bearing on the origin and development of the State. The volume is neatly bound, a characteristic of this well known publishing house, and printed in extra large (pica) type. The engravings are extra fine, and if the remaining volumes of series are as good in substance and appearance it will make the handsomest, most fascinating and complete history ever produced. The low price per volume places them within reach of all, and he who secures at least the *story of his own State* will not have reason to regret it.

A MANUAL OF MINOR GYNECOLOGICAL OPERATIONS. By J. Halliday Croom, M.D., Edinburgh, Scotland. First American from the Second Edinburgh Edition. Revised and Enlarged by Lewis S. McMurtry, A.M., M.D. Cloth, 12mo, pp. 228. With numerous illustrations. Philadelphia: Records, McMullen & Co., Limited, 1888.

This manual is intended to furnish the student and practitioner a brief, simple, and practical account of the more common gynecological operations, and to aid and direct him in acquiring the manipulative skill so essential for correct diagnosis and successful treatment. It is not so complicated but that its suggestions can be readily comprehended and understood by all. Dr. Mc

Murtry lays considerable stress upon the importance of antisepsis in all operations and speaks of the different antiseptics employed, their preparation and use. He says: "Even the most trivial of minor gynecological operations have been followed by septic infection, metro-peritoneal inflammation, cellulitis, peritonitis, and, in some instances by death. It is only since the system of surgical cleanliness called antisepsis, has been introduced into surgical practice that the operations described in these pages could be undertaken with an assurance of safety." Further he adds: "Before undertaking any operation or examination the surgeon should see to it that his hands and fingernails are thoroughly cleansed. The field of operation should be rendered surgically clean, and so maintained during the operation and throughout convalescence."

This work is claimed to be the best written, printed, and illustrated student's manual on the subject yet offered, and deserves the attention of all interested in this important branch of medical science.

DISEASES OF WOMEN.—Pathology, Diagnosis and Treatment. By Graily Hewitt, M.D., London, F.R.C.P., Professor of Midwifery and Diseases of Women, University College, and Obstetric Physician to the Hospital; formerly President of the Obstetrical Society of London; Honorary Fellow of the Obstetrical Society of Berlin; Honorary Fellow of the Gynecological Society of Boston. A new American, from the fourth Revised and Enlarged London Edition. Edited, with Notes, Additions and Illustrations, by H. Marion-Sims, M.D., Attending Surgeon to St. Elizabeth's Hospital, New York, etc. New York: E. B. Treat, Publisher. Price, per vol., $2.75.

This work consists of three octavo volumes, over 1,000 pages and 240 illustrations. Coming as it does from so high authority as Dr. Graily Hewitt at once assures its value. There is probably no one who has had more opportunities for observation and more practical experience in the diseases peculiar to women than the author of this work, and he is recognized to-day as the greatest living authority. The work has been accepted both in England and America as *the* standard and has been adopted as a text book in many of our medical colleges. Dr. Hewitt is a clear and forcible writer having the faculty of expressing his thoughts fully yet concisely and to the point. The edition from which this was published was in great part rewritten and the added experience and knowledge of ten years embodied in it. The author believes that the changes in the shape and position of the uterus, the fruitful source of the so-common ailments of the women of America, are seldom seen except when the general strength has been reduced by a systematic and frequently long continued practice of taking too little food and the individuals are in a condition of "chronic starvation." This he believes predisposes to uterine displacements, and one item of treatment recommended is better nutrition and attention to hygienic rules. Hysteria is claimed as a reflex system of uterine, not ovarian, origin, dependent always upon malposition, and to remedy the latter is to cure the former.

The American author, the son of the late eminent Dr. J. Marion Sims, has thoroughly revised the English edition, freely criticising and commenting upon the author's views and bringing it into conformity with American practice. The illustrations being as far as possible the exact size of the parts they represent, enhance the value of the work. Altogether it is a complete treatise on this subject and fully up to the advanced views of the profession. The volumes are handsomely bound and will form an attractive as well as useful addition to the physicians' library.

ALDEN'S MANIFOLD CYCLOPEDIA. The second volume of this work fulfills the promises of the publisher's prospectus. It is a really handsome volume of 640 pages, half Morocco binding, clear type, profusely illustrated, and yet sold for the price of 65 cents; cloth binding only 50 cents—postage 11 cents extra. Large discounts even from these prices are allowed to early subscribers. It is to be issued in about thirty volumes.

The MANIFOLD CYCLOPEDIA is, in many ways, unlike any other Cyclopedia. It undertakes to present a survey of the entire circle of knowledge, whether of *WORDS* or of *THINGS*, thus combining the characteristics of a Cyclopedia and a Dictionary, including in its vocabulary every word which has any claim to a place in the English language. Its form of publication is as unique as its plan—the "Ideal Edition" its publisher calls it, and the popular verdict seems to sustain his claim. It certainly is very convenient and is worthy of examination by all searchers after knowledge. The publisher sends specimen pages free to any applicant. JOHN B. ALDEN, Publisher, 393 Pearl St., New York, or Lakeside Building, Chicago.

Our Aftermath.

DEATH OF DR. GEO. W. KEELY.—As we go to press we learn of the death of Dr. Geo. W. Keely, of Oxford, Ohio, from the effects of a fall from the third story window of the block in which his office was situated. An obituary notice will be given next month.

NEW DENTAL JOURNAL.—*The Dominion Dental Journal*, a quarterly magazine, will soon be issued at Toronto, Canada. At present no dental journal is published in the Dominion.

NATURE'S WONDERFUL WORK.—A.: "What dentist made your teeth for you?" B.: "These are my own teeth. No dentist made them." "You don't say so? How deceptive they are! Why, they look as nice as the best kind of false teeth. What a wonderful thing nature is!"—*Texas Siftings*.

COW-CULATED FOR DENTISTS.—A squib is going the rounds of the dental journals, stating that Dr. Parmly Brown, of Flushing, L. I., made a set of teeth for his cow. Pshaw! we know a dentist up in Oregon who made teeth for his whole herd of cattle, making sometimes a full set for a horse or mule. And we also know of a country editor who furnished his paper two years for a yearling heifer.—*So. Cal. Prac.*

Take Your Six Weeks' Holidays.—Dr. Routh tells the following: "I well remember a conversation I had with the late Dr. Golding Bird a few weeks before his death. He was then in the zenith of his popularity, and recognized by all as one of the ablest of our London physicians. I called upon him one morning with a relative to consult him. Several other medical men preceded me. His rooms were full and I had to wait three hours ere I could obtain admission to his study and consult him about the case. I congratulated him on his success in practice. 'Yes,' he said to me, 'you are right; but I wish, nevertheless, to make your remark a text for a little parting advice. You see me at a little over forty in full practice, my rooms are full, and I am making my several thousands per annum (I think he said seven), and if I die to-morrow I do not leave as many to my family. All this I have done by sheer perseverance, unceasing hard work, and no holiday. But I am to-day a wreck. I have fatal disease of the heart, the result of anxiety and hard work. I know I cannot live many months, and my parting advice to you is this: Never mind at what loss, take your six weeks' holidays. It may delay your success, but it will insure its development. Otherwise you will find yourself at my age a prosperous practitioner, but a dying old man.' Six months after this conversation he had put off this earthly tabernacle."—*Med. Record.*

No False Teeth for Him.—"'N,' n,' honey! Dis niggah dun hab no 'ficial teeth tucked away in his mouf, yeah me? Fo' de good Lo'd want him fo' to hab teef, an him agoin' fas' to Canaan's lan', he done gib him de good ole crunchers like what he had fo' de war, I tell ye!"

The old man who delivered himself of this opinion is an old negro in the Newark almshouse. He is very fond of tobacco, but whenever he wants a fresh quid he has to clip it off the plug with a knife, as he has no teeth with which to bite it. "Deed, no sah. I can't take 'um; I can't take 'um," he continued, being pressed to ask the superintendent for a set of false teeth. "Mebbe youse gemmen is pokin fun at de ole man and mebbe you isn't, but no matter what 'tis, de old man kin dun gib y' pints on teef. He's mos, nigh onter ninety-five yeahs ole an' he ain't done had no crunche's fo' mor'n thirty ob em. Why bress yo eyes, honey, dis yeah ole carcase ud dun bin rottin' away in de tomb long time since, if de ole man's teef didn't mow out. Long as de ole man dun need de grinders he had 'em—and good ones dey was too, yeah me. But de time kem when de coon and hoe cake got too strong fo' de ole man. Den de good Lo'd dun take away his teef. De ole man got no biziness chewin' coon and sich. His dimgestion n' hab use fo' sich strong food. Mush an' m'lasses, milk an' reglor pickaninny dishes 's wot he ought to hab. He couldn't chew nuffin else, so took de pickaninny dishes an' good fo' many a day yet. Ef de Lo'd meant fo' me to eat de same kind o' truck dat I eat when Massa Linkum dun set me free, why bress yo' poo' heart he dun gib me teef for to do it too."—*New York Mail and Express.*

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

ADHESION OF LONG STANDING OF THE SOFT PALATE, BEING THE RESULT OF SYPHILITIC ULCERATION.

BY WM. KNIGHT, M.D., D.D.S., CINCINNATI, O.,
Professor of Anatomy and Oral Surgery, Ohio College of Dental Surgery.

C. L. aged 40, of short stature and a cripple, presented himself on October 18th, 1887, at the clinic of the Ohio Dental College, wishing to obtain an upper and lower set of artificial teeth. Professor Mollyneaux, upon examination of his mouth, saw an opening the size of a silver quarter situated about the centre of the hard palate. The teeth of the upper jaw were gone with the exception of two molars on each side, and the second bicuspid upon the right. The soft palate was almost completely adherent to the posterior wall of the pharynx, thus leaving an opening only one-eighth of an inch in diameter. The patient's voice, in consequence of these conditions, was extremely defective. Many words which he attempted to pronounce were distorted into unintelligible sounds, and it was only possible to gather his meaning by close attention, and a liberal way of guessing at many words.

Associated with this condition was complete deafness in the left ear, as well as defective hearing on the right one. Closer examination revealed that the openings of the posterior nares were impervious. It was impossible for the patient, when the hole in the hard palate was closed, to draw air through the nostrils, even by the most forcible inspiration. Dr. Mollyneaux requested me to see the patient, and to decide as to the practicability of an operation, with the view of dissecting up the adherent soft palate, and affecting an opening through one or both of the posterior nares. The patient's history as it was gathered, somewhat precluded an operation. His unfortunate condition was consequent upon syphilis, which he had contracted some eighteen years ago. This inveterate disease acting upon a strumous habit, which, while still a boy, had crippled his limbs and dwarfed his form, added largely to negative any surgical interference. But the patient was anxious to have something done and being a man of more than ordinary intelligence and pluck, for his class, we decided to make an attempt to do what we could. He was accordingly prepared, by general treatment, for the operation.

The syrup of ferrum iodidum was the chief remedy administered, as the writer believes that this preparation combines the constructive properties of iron as well as the alterative action of iodine; and both of these drugs were certainly indicated in his case, especially so as at this time small superficial ulcers were present upon the oral mucous membrane.

These ulcerations rapidly healed under the medicines administered, and by the thirteenth of November, he was brought before the class for the operation, Dr. Cundell-Juler kindly agreeing to be present. It had been decided to operate without the use of a general anæsthetic, the reasons for this being quite obvious. First, the danger there might be of asphyxia, owing to the impossibility of respiring through the posterior nares; and second, the great advantage of having the intelligent coöperation of the patient in keeping the jaws wide open and ejecting the blood from the mouth. The hydrochlorate of cocaine, of a five per cent. solution, was painted freely over all the parts that were to be subjected to instrumental treatment. This painting was repeated at intervals of two minutes for ten times. This had been done at my office previous to bringing him before the students. A stronger solution of ten per cent. was on hand to be used during the operation if necessary. Complete local anæsthesia was produced in this way, and throughout the operation the patient declared that he was free from pain. The ten per cent. solution was needed but twice. The first object was to dissect the adherent palato-pharyngeous muscles. This was done without much difficulty, although the cicatricial tissue was very hard and dense. Very slight hemorrhage took place, and what blood there was was freely ejected by the patient. In dissecting the muscles from their attachments, the periosteotome was found to be more serviceable, after the first incisions had been made, than the knife. An attempt was now made to effect an opening through the posterior nares. The finger could now be inserted through the gap made, to explore to a limited degree the regions above. These were found to be filled with a mass of hard indurated tissue.

It was thought best to leave this undisturbed for the present, and wait for the results of what had already been done. The fear of awakening inflammatory action in a subject of this kind being ever present in the mind. The loosened posterior pillars of the palate were transfixed with a needle carrying a ligature, which was fastened to the bicuspid tooth of the upper jaw.

The ligature remained in position for three days, and gave rise to but slight inconvenience. Some suppuration occurred along the borders of the posterior pillars, while the ligature failed to prevent considerable contraction and adhesion taking place. One symptom of which the patient had complained for years was curiously completely relieved by the operation. This was a feeling of constriction across the upper part of the chest, as he expressed it, "I can't take a full breath."

Two weeks afterwards a second operation was made at my office, Dr. H. T. Smith assisting. At this time we broke up the recent adhesions and succeeded in forcing a small silver probe through the left posterior nares. Four more operations at intervals of a few weeks resulted in effecting openings in both nares so that he could breathe freely through these channels. This gratifying success was largely due to the patient in faithfully and intelligently carrying out directions. There was a constant tendency in the parts to close up after an opening had been made. To overcome this, he was directed to pass his finger up above the soft palate into the nares. This he did many times a day, although at first it gave him considerable pain, and caused much gagging. He took an unusual interest in the success of the case himself; and without his earnest coöperation, I doubt whether any surgical interference of ours would have been of much avail. He is now wearing a plate that completely closes the opening in the hard palate, compelling him to breathe through the posterior nares which he does with ease.

The caution exercised in operating upon this case was due to his unfavorable condition, and the fear that surgical interference might leave him in a worse predicament than that for which he sought relief. At one time this fear was augmented by his becoming almost totally deaf. This occurred a few days after the third operation, at which time we had broken and cut away a quantity of the hard cartilaginous tissue in the posterior nares. The possibility of this result had not been overlooked. The patient had been told that his hearing might, for a time, become worse, although I believed that in the end it would improve. However, he was greatly alarmed when he found himself deaf, and came to my office early in the morning, and in a high voice said, "Doctor, I am deaf, I can't hear anything." I assuaged his fears as best I could, placed him under the treatment of small doses of iodide of potassium, and directed him to call and see me every day. On the second day afterwards he came filled with joy. He said, "I can hear now in both ears; try my left ear and see." It proved to be the case. The left ear which for several years had been useless, was now able to hear the ticking of a low toned watch two feet distance; and the improvement in the right ear is also well marked. At the present writing the articulation of the patient is distinct. There is no difficulty whatever in understanding every word he utters. Altogether he finds himself greatly benefited since his first application for relief at the Ohio College of Dental Surgery.

Here was a case that at first offered but little hopes of any improvement, and far less of permanent benefit; and yet by cautiously working among the soft parts of the throat we were capable, without setting up any secondary complications, of so improving the hearing, speaking, and breathing of this individual, that he is able not only to earn higher wages in consequence, but has a greater fulness in the enjoyment of life.

THE ETHICS OF DENTISTRY.

BY GUSTAVUS NORTH, D.D.S., SPRINGVILLE, IOWA.

[Read at the Eastern Iowa Dental Society.]

Much good can be gained by meeting at our conventions and working up a good professional feeling. Dentists are generally selfish in their practice, selfish in their feelings and dealings one toward another, and have but little respect for their neighbor—always willing and ready to bring out something that will have a tendency to be a detriment to some practitioner, which we all know within ourselves to be wrong.

Do not try to build up your own practice by condemning your neighbor. If you have nothing good to say in regard to another man's practice, say nothing; time will tell the value of all operations, and it is well that we should stop and reflect upon these things.

Remember, gentlemen, a poor operation will always stare you in the face and condemn you in future practice—the best of operations are poor enough, and we should always work for the best interests of our patients if it requires an extra exertion in our behalf. I know that Iowa, and especially the eastern border, has within its limits suitable material to organize a dental association that will be an honor to the State, as well as an honor to the profession.

Iowa is one of the banner States in the union with her many natural advantages, etc., etc., and the professional men within its borders have stamped as a living monument in their countenances the motto "Onward and Upward" in the professional interests of Iowa.

We have the State dental society, an honorable institution of itself, and one we all feel proud of; but we have within our limits those who are entitled to be classed as honorable and worthy practitioners that are not members of any organization, that are willing and ready to lend a willing hand in organizing this society.

Some of our most talented men have been held back and deprived of almost free rights on account of not uniting or willing to bow their necks in submission to the yoke of certain institutions.

But the object of the eastern Iowa dental society is to assist every dental practitioner that the law has honored with a certificate of right to practice our profession within its borders.

And every dentist that attends this society may consider himself welcome. We are here to assist and help one another to be friends and not enemies. Nothing is of more pleasure to me than to assist some struggling brother dentist who is striving for a higher standard of knowledge. We should always be willing to consider it a pleasure to assist any one in our own profession. A selfish man will secrete all his own ideas and ignore dental societies, afraid to come out and compare ideas, forgetting that other men are as far advanced as he, and their ideas oftimes far superior. No one need think he is so far advanced he cannot gain knowledge and be greatly benefited by attending associations and extending a willing and honest hand to neighboring practitioners.

Let each individual press forward and be willing to be a faithful student in the great work that is before us. If we stop by the wayside, we will be left behind, as knowledge and science are advancing at a rapid speed and it takes great energy to keep pace with time. A few years ago the old snag that was grasped with the forcep and thrown in the spittoon is now worth the value of a farm to crown and for bridge-work.

The past twenty-two years, that I have been connected with the profession, has brought out many valuable and useful things in practice in all channels of the profession. The child that in olden times was brought to the dentist, screamed with fear and pain on account of the ignorance of that member of the profession in extracting those precious little organs, to make room, as was claimed, for permanent ones, but was in fact one of the main causes of irregularity. But now the children come to our office as free and willing as though they were going shopping; the forcep is discarded, the fear removed, and we have the confidence of our little patients, and those little organs are retained until nature sees fit to throw them off. Even a deciduous root oftimes is a valuable member in expanding the jaw and in assisting nature to accomplish great work. A child is a bundle of sensitive nerves and should be treated with the greatest of care; and if you are successful in this one branch, you have opened the way to a successful practice.

Gentlemen, we should feel proud of our name, for we have much to be proud of. We are acknowledged as a profession of high standing.

The medical profession has extended a willing hand to assist us onward and upward towards the mark of great prize. They have added a dental section to the American Medical Association which now gives us a right and privilege to become members of that honored body.

[If we had more of the spirit expressed in the paper and more district societies of this sort, the profession to-day would be better for it.—Ed.]

APPEARANCE OF SARCOMATOUS TUMORS.

BY DR. W. B. KERN, CAIRO, NEB.

Sarcomatous growths belong to the group of embryonic connective tissue, and are practically of three types, namely, round cell, spindle-shape cell, and giant cell. Every sarcomatous tumor contains each of these three types of cells, and the tumor belongs to that variety whose cells predominate; *e. g.*, if the round cells are in excess, it is classified as a round-cell sarcoma; if the spindle-shape cells predominate, it is called spindle-shape-cell, sarcoma, etc.

The malignancy of sarcoma is also the same. The most benign is the tumor in which the round cells predominate; next in this classification comes the spindle-cell sarcoma; and most malignant is the giant-cell growth.

Sarcomata are very rich in cells, very vascular, with but little stroma. Growths of this kind strongly resemble granulation tissue. Sarcomata are easily recognized by their vascularity, upon which depends their characteristic succulence. They are very often the seat of parenchymatous extravasation, these "hemorrhagic infarctus" sometimes giving rise to new productions of pigment matter.

Tumors are not foreign substances introduced into the body, but they all have their prototype in the body. Sarcomata have a roundish, sharply bounded form, and are usually encapsulated, an important point in differentiating between this variety of neoplàsia and infiltrated carcinoma. Sarcoma develops frequently after local irritation, especially after injuries.

Cicatrices are frequently the seat of these growths. One variety comes frequently from irritated moles.

Sarcoma grows comparatively rapid, as a rule, but slow, however, under certain circumstances. They are usually solitary, but may be multiple, and very frequently recur after extirpation.

Sarcomata may develop in any of the connective tissues of the body. They are, as a general rule, not painful, unless located in or on nerve trunks.

Sarcoma which develop very rapidly are much more dangerous than those whose development is slow. They very frequently attain large size. If a sarcoma be located in the subcutaneous cellular tissue, it may be felt as an encapsulated, movable tumor. Sarcomata are rarest in children, rare from ten to twenty years of age, most frequent in middle life, and very rare in old age. Men and women are affected with equal frequency.

The treatment of sarcoma is not essentially different from that of other malignant tumors. When the growth has been early and completely extirpated, it gives the patient the best chance for life. The practice of applying escharotic pastes, etc., to malignant tumors, is undoubtedly a very bad thing. No doubt many simple sores and benign tumors have been converted into true malignant growths by the continued application and irritation of escharotics. Tumors are primarily local diseases, and, when removed early, the treatment proves most satisfactory. If any doubt exists in the surgeon's mind as to the true nature of a tumor, it had best be removed, as it is surely safer to remove a benign tumor than to let a malignant growth run on and finally terminate the life of the individual.

If a lump is observed in which there exists some doubt as to its exact nature, it is a much safer plan to remove it early, even if it proves to be simply a benign growth, than to subject your patient to the hazardous work of a malignant tumor which might be present and the diagnosis shadowed. If it be a benign tumor and you remove it, your patient is none the worse for it; while, on the contrary, if it proves to be malignant, you have done a vast deal for your patient.

JOINT MEETING OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

[Reported for the OHIO JOURNAL OF DENTAL SCIENCE by "Mrs. M. W. J."]

THE American and Southern Dental Associations met in joint session, in Louisville, Ky., August 27, 1888, continuing in session four days. The meetings were held in the Female High School Building which was most admirably adapted to the purpose, affording ample room for clinics, exhibits, committee work, separate rooms for the business sessions of the two associations, the beautiful chapel room being devoted to the joint meetings for scientific discussions.

At 9 A. M. separate meetings of the two associations were held for the payment of dues and other routine business.

The American Association was presided over by Dr. Frank Abbott, New York; Dr. Geo. H. Cushing, Secretary. Dr. Crouse was appointed Treasurer *pro tem.* in place of the lamented Dr. Geo. W. Keely, Oxford, Ohio.

The deaths of Drs. Stoddard Driggs, J. H. DeVore, Wm. Dutch, and C. P. Litch, were subsequently reported, and suitable memorial resolutions adopted. Several other meetings of the American Association were held, but little beyond routine business was transacted.

A resolution was adopted declaring it not professional to place anything on a dentist's card more than the name, title and address.

Drs. Taft, Barrett, and Darby were appointed a committee to prepare a complete list of graduates and licensees practicing under the auspices of the association.

The election of officers was held at a called meeting Thursday, August 30, at 1 P. M., resulting as follows:

Chas. R. Butler, Cleveland, Ohio, President; A. W. Harlan, Chicago, Ills., 1st Vice-President; S. A. White, Savannah, Ga., 2nd Vice-President; F. A. Levy, Orange, N. J., Cor. Secretary; Geo. H. Cushing, Chicago, Ills., Rec. Secretary; A. H. Fuller, St. Louis, Treasurer. E. T. Darby, Philadelphia, Pa., G. W. Mc Elhaney, Columbia, S. C., J. N. Crouse, Chicago, Ills., Frank Abbott, New York City, N. Y., Executive Committee.

Saratoga was selected as the place of next meeting.

Dr. B. H. Catching, Atlanta, presided over the Southern Association. Dr. L. P. Dotterer, Secretary. Dr. H. A. Lowrance, Treasurer. The roll was called, and a revision ordered, dropping those in arrears for three years' dues in accordance with the constitution.

Drs. J. C. Story, D. R. Stubblefield and G. F. S. Wright were appointed a committee on resolutions in memory of Dr. J. H. Prewitt, late 1st Vice-President. At a later meeting the young daughter of Dr. Prewitt was elected an honorary member of the association, and a committee appointed to assist her in the publication of a book now ready for the press. The deaths of Drs. J. S. Franklin, Nashville, Tenn., J. H. Cook, ———, and H. M. Grant, Abington, Va., were reported and memorial resolutions adopted.

The clinics of Dr. C. C. Carroll, Meadville, Pa., in aluminum casting for dental plate, crown, and bridge work, were made the subject of dicussion. The processes being all patented, the question arose whether they could properly come before the association. Dr. Carroll was granted the floor and stated that the processes were patented solely to protect the profession from sharpers, their use being freely given to the profession without license or royalty.

Dr. Thackston pronounced Dr. Carroll's position correct and his statement satisfactory.

Dr. H. J. McKellops stated very clearly the status of the Profession versus The International Tooth Crown Co., the suits brought by this firm having been decided in favor of dentists, as regards crowns, and for the company, for bridges. Both decisions have been appealed, and large sums of money are needed to conduct the cases, which if decided for the company will work great hardships to the members of the dental profession. As the case now stands, they are enforcing claims for penalties for infringements in the past, and licenses and royalties for the future. On motion the Treasurer was appointed to receive all money subscribed for this purpose.

A resolution was also adopted appointing a committee to memorialize congress to remove the duty on dental goods, materials, and appliances. It was also resolved that all State dental societies should be urged to take similar action, and that members individually, should endeavor to influence their representatives in congress to this end. Many new members were elected.

The election of officers for the Southern Dental Association was held Friday at 1 P. M.

Galveston, Texas, was selected as the place of meeting.

Dr. J. Y. Crawford, Nashville, Tenn., President; Dr. Jno. C. Story, Dallas, Texas, 1st Vice-President; Dr. Wm. N. Morrison, St. Louis, Mo., 2nd Vice-President; Dr. J. S. Thompson, Atlanta, Ga., 3rd Vice-President; Dr. D. R. Stubblefield, Nashville, Tenn., Cor. Secretary; Dr. M. C. Marshall, Little Rock, Ark., Rec. Secretary; Dr. H. A. Lowrance, Athens, Ga., Treasurer.

Executive Committee.—Dr. Dyer, Galveston, Texas, Dr. Clifton, Waco, Texas, for one year. Dr. Staples, Sherman, Texas, Dr. Catching, Atlanta, Ga., for two years. Dr. Beach, Clarksville, Tenn., Dr. H. J. McKellops, St. Louis, Mo., for three years.

The first joint meeting of the two associations was called to order at 11 A. M., Tuesday, August 27.

On the platform were seated Dr. Frank Abbott, President of the American Association, and Dr. B. H. Catching, President of the Southern Association; Dr. Geo. H. Cushing, Secretary of the American, and Dr. L. P. Dotterer, Secretary of the Southern Association; Dr. W. H. Thackston and some other prominent members of the profession.

Dr. C. G. Edwards, Chairman of the Committee of Arrangements, introduced Mayor Jacob, who in a few brief but well chosen words, offered a greeting of welcome, which was responded to by Dr. A. O. Rawls on behalf of the Kentucky State Dental Association, Dr. E. T. Darby for the American Association, and Dr. J. Y. Crawford, for the Southern Association.

After a few announcements the meeting adjourned to 7.30 P.M.

Dr. Catching, as presiding officer, introduced Dr. Abbott who delivered his address as President of the American Association. His topic was the

ADVANCES MADE IN DENTAL EDUCATION.

He spoke of the brilliant achievements and operations of American Dentists, and reviewed briefly the most recent methods and scientific theories, and especially the great advances made through the use of the microscope.

Dr. Abbott then introduced Dr. B. H. Catching, President of the Southern Association.

Dr. Catching took for the subject of his address the question,

IS THE AVERAGE DENTIST OF TO-DAY A SPECIALIST IN MEDICINE?

Leaving it as a fact settled beyond dispute that dentistry is a specialty of medicine, he considers that, through defective education and other causes, dentistry is too often practiced as a mechanical trade instead of as a profession demanding a scientific knowledge of medicine and surgery. In view of the present advanced scientific acquirements, he thinks the present system of separate dental colleges has had its day, and that the demands of to-day require a thorough medical course, to be followed by special training in a dental infirmary where the best teachers should demonstrate practically the special modes of operative dentistry and dental surgery. Mechanical ability is still indispensable, but a scientific knowledge of medicine and surgery is no less so. The average dentist of to-day, though proficient in that which equips the artisan, is deficient in that which makes the specialist in medicine; his acquirements embrace only a little of medicine mixed with a little of mechanics. Higher qualifications, a broader curriculum, an extension of time are the demands of to-day.

He also spoke of the legal liabilities incurred, the degree of M.D. offering greater protection than the special degree of D.D.S. in surgical operations not strictly included in the dental curriculum, yet which are daily undertaken by the scientific dentist of today.

This paper gave rise to a very animated discussion.

Dr. Darby said that he disliked to appear in opposition to so able a paper, but there were some points that required notice. The practical dentist needs an education of the fingers as well as of the mind, and he must begin at the bottom of the ladder, not at the top. He thought that a dental surgeon would be sustained by law in the performance of any operation performed in the mouth.

Dr. N. J. Roberts thought that the usual education of a dentist would not enable him to follow out the necessary course of treatment in case of necrosis, blood poison, or other bad results that might follow certain operations; he was not sufficiently educated in general medicine. Where should he look for protection in such cases except in the degree of M. D.?

Dr. Thackston said that some of the grandest, the most formidable operations in surgery have been performed by dental surgeons, and that they are thoroughly protected by law.

Dr. Cushing said that if a man made a mistake through ignorance he would be held responsible for it whether physician or dentist.

Dr. J. J. R. Patrick said that neither common law nor criminal law would hold a man guiltless if guilty of mal-practice, no matter how many diplomas he might hold.

Dr. W. H. Morgan said that medicine was a science of unascertained truth, based on plausible theories.

Dr. J. D. Patterson said that in dental jurisprudence the question would not be whether a man bore the degree of D. D. S. or M. D., but whether evidence has been given of due knowledge, skill and care.

Dr. Brophy said that under the charter and diploma of a dental college, a man had the right to practice anything taught in that institution.

Dr. Ottofy thought we were injuring our own cause in raising these questions. We are not overstepping the boundary line when we enter the field into which we have been so freely invited.

Dr. C. N. Peirce cited a case of prosecution for mal-practice where the judge had ruled the case out of court because no evidence had been adduced to show that the defendant was not educated and competent.

Dr. Sudduth said that if a man held only the degree of D. D. S. and performed an operation not taught in the curriculum of a dental college, the jury would be prejudiced against him; but it would not be his degree but his qualifications that would be called into question. If he could show that he possessed the requisite skill and competency, he would overcome all prejudice, but to defend himself properly before a jury, he must be thoroughly informed, not only in the surgical but in the medical aspects of the case.

Dr. G. J. Friedrichs said that medical men can practice dentistry, but dental surgeons cannot practice medicine; they would be liable to prosecution unless holding the degree of M.D., but no Board of Dental Examiners can prevent a physician from practicing dentistry.

Dr. L. D. Carpenter said he was surprised to hear this statement, for nearly every State dental law prohibits physicians from practicing dentistry, rendering them liable to prosecution for misdemeanor.

Dr. Catching closed the discussion in humorous style, saying that nearly all of his opponents were college professors and it would be impossible for him to talk them all down. There is no question but that if a dentist gives chloroform with bad results it goes hard with him, but if the physician has the same result, he has only to say *heart failure*, and look very wise, and he is all right. If the dentist's patient dies, a physician has to give the certificate; if it does not exonerate him the iron bars receive him.

At 9.30 A. M. Wednesday, the meeting of the joint session was presided over by Dr. Catching, and the reports of standing committees called for.

OPERATIVE DENTISTRY.

Geo. H. Winckler, of the Southern Association; E. T. Darby, of the American Association, Chairmen.

Report to be presented by Dr. Winckler. In the absence of Dr. Winckler, Dr. E. T. Darby made the following report:

Four papers had been accepted by the committee. The most important subjects coming under their observation were, Immediate Root Filling and Implantation, The Use of Copper Amalgam, The Use of Germicides, The Treatment of Pulpless Teeth. The use of germicides has so lessened the danger of septic infection that great risks can be taken. The operation of implantation is so far an apparent success. Dr. E. C. Kirk has reported thirteen cases with two failures, Dr. S. G. Perry twenty-seven cases with one failure, Dr. G. L. Carter thirty-two cases with one failure, others have reported a less number of cases with no failures. But the question arises, What constitutes success? How long should it last? That a tooth implanted in an artificial socket serves every purpose there is no doubt. Experience thus far seems to warrant the operation as good *for the time being*, but time alone can solve the problem of its duration. Microscopical research will help to determine the factors of success. Plastic materials are admitted to be necessary in saving a certain class of teeth. By many English and European dentists copper amalgam is considered the best of all. Those of American dentists who have used it most, report very satisfactory results.

Dr. W. Storer How, Philadelphia, read a paper on

DENTAL REPAIR, BY MEANS OF PORCELAIN INLAYS,

substantially the same as reported in the *Cosmos*, August, 1888, illustrated by a number of specimens which were passed around for inspection.

Dr. J. J. R. Patrick, Belleville, Ills., read a paper on

METHODS OF SETTING ARTIFICIAL CROWNS.

He said that all roots of natural teeth are available for the adjustment of artificial crowns, but the proper mode of adjustment is not fully understood. To attain the best results, a perfectly fitting gold band between the gum and the root is the first step after the root has been prepared. Everything depends on the nice adjustment and close fit of the band to the root. The great difficulty in obtaining a proper fit lies in the fact that no matter what tooth you are dealing with, you are dealing with the base of a cone, and the farther down you go the poorer is the fit. You are driving a band down from the thickest end of the root, and at the lower edge it will stand out more or less, leaving a space between the band and the root.

[The method of overcoming this difficulty is clearly shown in the *Independent Practitioner*, Sept., 1888, page 497.—Rep.]

Dr. Patrick has constructed a crown with a platinum band baked into the crown, offering the advantage of being ready to attach to the band encircling the crown with one solder, telescoping the platinum band of the crown inside of the gold band of the root. Less preparation of the root is necessary, and less tooth-substance is sacrificed. The quality of gold used is of great importance, both stability and pliability being essential.

Dr. Patrick gave the following formulæ:

Crown gold.

Pure gold,	15.
Platinum,	1.
Cyanide of potassium,	5.

Kept at fusing point 30 minutes.

Band gold.

Pure gold,	1.	fuse.
Coin gold,	1.	

Best solder.

Band gold,	89.
Copper,	4.
Soda-borax,	10.

Second grade solder.

Of the above solder,	89.
Silver,	7.
Copper,	4.
Soda-borax,	7.

All gold solders should be made of the gold that it is to be used with. If only 12 karat gold is to be used, make the solder with that; no baser metal than copper is admissable.

Dr. Patrick described his method of making crowns by means of a punch and die by which the crown is made without seam or fold and of equal thickness in every part. He described the mode of crowning roots which are fractured far below the gum, encirling the root with a band of platinum to hold away the soft tissues while devitalizing and removing the nerve. The cup formed by the band is filled with cement, and the broken section reconstructed to the level of the gums. The gold crown is then telescoped over it and made a fixture by means of a dowel.

As regards implantation, Dr. Patrick considers that the theories entertained so far upset all known laws of physiology. He would prefer an artificial tooth with a smooth, undulating root surface. For the root he would make a cone of metal, filled with indestructible matter, on which he would put a crown. By a process of proliferation this would be retained in the mouth of a healthy person.

Dr. C. Ed. Kells, Jr., New Orleans, read a paper, illustrated by an electrical apparatus, on

THE CONDUCTIVITY OF FILLING MATERIALS.

The instruments used in the experiments consisted of a very delicate thermostat. The screw being turned until it almost touches a zinc disk, by the application of heat the disk expands, bulging towards the screw, a drop of water makes connection and an electric bell rings. In these delicate experiments, a little cell consisting of the enamel shell of the crown of a molar tooth, was placed on the disk, a drop of warm water 40° dropped in this tiny cell. If it conducts the heat to the disk, the latter will expand and the bell rings; but the cell being of enamel, the bell fails to ring. The cell of enamel being replaced by one of gold, of the same size, the bell rings promptly as the warm water is dropped into it from a drop tube, the heat being transmitted instantaneously; the same is true of a cell of tin, one of copper amalgam, one of ordinary amalgam alloy. Substituting cells of agate cement, or oxychloride of zinc, which are considered non-conductors, the bell rings but not so promptly. With a cell of white gutta-percha the bell rang only after a long wait. With the enamel cell it failed entirely to respond; with the metals it responded almost instantaneously; with the oxychloride more slowly; with the gutta-percha still more slowly. From these experiments we conclude that filling materials may be divided into three groups as regards their conductivity: 1st, Metals; 2nd, The cements; 3rd, Gutta-percha; even the latter not being absolutely a non-conductor.

(To be continued.)

ILLINOIS STATE DENTAL SOCIETY.

[Reported for the OHIO JOURNAL OF DENTAL SCIENCE by "Mrs. M. W. J."]

(*Continued from page* 429.)

DR. W. A. JOHNSTON, Peoria, read a paper entitled

WHAT SHALL WE DO WITH INFLAMED PULPS?

Dr. Johnston said that of course every one knows just how to treat inflamed pulps, but he believed that the man who never failed was the man who had no practice! An inflamed pulp offers all the usual features of inflammation, but differs because of the position of the tissue inclosed in a mass of hard unyielding texture, with no absorbents to carry off the products, and liable to strangulation. An inflamed pulp means *the toothache* and the destruction of the pulp is usually necessary. Opening into the pulp will sometimes afford relief through the abstraction of blood; sometimes a saline cathartic is beneficial; a capsicum plaster may produce resolution, also the local application of a saturated solution of iodine, chloroform, oil of cloves, or eugenol, may quiet for a time, but will not cure. Trypsin, the solvent for diphtheritic membrane, will decompose a blood clot. A continuous current of warm air relieves to a marked degree. All remedies should be applied warm. In inflammation of the pulp the blood rushes in but cannot go back; the corpuscles die and suppuration ensues; hence stimulants are indicated, but not strong remedies which coagulate, a coagulum being a foreign substance which has no business in the pulp. Arsenic is often applied in vain because it fails to reach the pulp through the coagulated surface mass. A preparation of arsenic one part, hydrochlorate cocaine four parts, lanolin five parts, may be applied to an aching pulp which may be removed without pain, when its removal is imperative. Patients come to us for three reasons—Prudence, Pride, and Pain—and the greatest of these is Pain!

Dr. Harlan, who was appointed to open the discussion of this paper, said that the essayist had treated the subject in a manner befitting its importance, dealing, not with *exposed*, but with *inflamed* pulps, but he hardly agreed with him that all inflamed pulps should be destroyed, which was the inference to be drawn from his paper. In young patients every effort should be made to preserve the pulp until the full maturity of the tooth. The first permanent molar is often exposed and inflamed at the age of seven or eight years; the same is sometimes true of the pulp of the incisors before they have attained their full growth of root. In the anterior portions of the mouth the destruction of the pulp is liable to cause serious disfigurement, especially in women, whose teeth are so much more exposed to view than those of men. He had but little hope of permanent success in pulp-capping after adult age, in teeth that have ached for any considerable time. He did not concur in the recommendation of warm remedies, but considered the arsenic, cocaine, lanolin prescription excellent for pulp destruction. When it has been decided that destruction is inadvisable, such agents should be employed as will reduce inflammation and relieve blood pressure; puncturing the pulp with a fine point will afford relief; iodoform or iodol, with the essential oils, may then be applied without pressure. He would not apply remedies capable of destroying the surface of the pulp, advising the least interference possible as leaving the pulp in better condition for final capping; before capping would try temporary dressings for a few weeks.

Dr. Crouse, who was appointed to open the discussion on the paper of Dr. Moody, said that the views formulated in the paper were just the opposite to his own practice in nearly every respect. He did not believe in the theory of compatibility between dentine and filling material, but would use tin in cylinders rather than cement, deferring the permanent operation only long enough to see if the labor would be warranted. He wants the coagulated albumen on the surface of the pulp, followed by oxychloride of zinc. After every big meeting he goes home and torments his patients with various new modes, but always goes back to the same old method with increased gratification. He does not say it will never prove a failure, but he will continue to try to make it a success. He does not destroy mummified pulps; if drilled into there is liability of trouble. He said he was aware that his method was a chestnut and a very old one, but he likes it, and his patients like it.

Dr. Wassall spoke of the difficulty of diagnosing the first stage of inflammation, hyperæmia or simple congestion, even dead teeth often responding to heat by transmission through the apex to the gums.

Dr. Gilmer applies oxyphosphate on a quill cap in incisors.

Dr. Cushing and Dr. Harlan endorsed the return to the use of oxychloride with a film of copal ether varnish over the pulp to prevent shock.

Dr. Morrison also endorses the oxychloride, but uses wood creosote first, absorbing the surplus with French bibulous paper —not the Japanese.

Dr. Harlan emphasized the importance of using the rubber-dam.

Dr. Noyes said the essential points were, 1st, cure of the disease; 2nd, perfect antisepsis; 3rd, protection without irritation.

Dr. Townsend said a live tooth would always respond to rhigolene spray.

Dr. Cummings, Golconda, applies as a sedative for exposed pulps hydroch. cocaine 4 to 6 minims, morphine ½ grain in a paste, dissolved in 20 minims chloroform. After from six to twenty-four hours the tooth can often be filled with gold or amalgam.

Dr. Swain said he was glad to know that some one succeeded in capping exposed pulps. He had never saved one, and had never seen one that had been exposed.

Dr. Crouse asked if that raised the question of integrity, or of ability to detect exposure?

Dr. A. W. Harlan then read a paper from Dr. L. P. Haskell on

PROSTHETIC DENTISTRY; SOME DIFFICULT CASES AND THEIR TREATMENT,

of which the following is a synopsis:

Were the conditions of all mouths similar and equally favorable, the insertion of artificial dentures would be a mere pastime to the experienced dentist. But unfortunately this is not the case. It is often difficult to make the patient comprehend this, as she remarks that "her mother or some friend has a set of teeth she can scarcely pull out of her mouth, and she can even crack nuts with them, and why cannot I?"

Often, the work is undertaken without first considering all the unfavorable conditions of the mouth. While some mouths are so favorable that a set of teeth made by a novice will work well, others are so unfavorable that the utmost care and experience are necessary to construct them, and the patient will have to exercise patience, and require a much longer time to learn to use them.

After a careful diagnosis of such cases, I explain to the patient the conditions of the case, and endeavor to make clear its difficulties and what may reasonably be expected from the work when completed. Often the patient will not submit to the expense necessary to secure the best results. Sometimes patients, after being told what must be done to secure the best results, will allow you to complete a part of the work and then refuse to have the rest done, because perhaps some tooth or roots must be removed, and then complain that the work is not satisfactory.

Another class of cases is where the upper teeth are all gone, and on the lower jaw the six anterior teeth and one or two bicuspids on one side remain. There being no teeth on the opposite side of the jaw to counterbalance the pressure of these one or two bicuspids, the plate is constantly displaced. The extraction of these bicuspids is the only remedy, because artificial teeth on the opposite side would soon yield to pressure and the pressure revert to one side. Extract and insert the partial lower, and thus keep the pressure equalized. The extraction of one or two sound teeth subserves the best interests of the patient. This must be regarded rather than mere sentiment.

There are cases where, in the upper jaw, all the anterior and on one side all the posterior teeth are missing. In such cases it would be better to extract all, still I hesitate to advise it, but do the next best thing, viz., make a suction plate, and put a clasp on one of the bicuspids to counteract the pressure on the other side in masticating; at the same time let the pressure be on the natural teeth.

Again where all the lower teeth, and one-half or two-thirds of the upper, are missing,—from the central incisors back, the lower artificial meet on one side natural teeth and unyielding pressure, and on the other side artificial, and yielding pressure. Here is a case, again, where the only effectual remedy is the extraction of the remaining upper teeth; a partial remedy is secured by shortening the lower teeth every few months on the side of the upper natural to relieve the excessive pressure.

Frequently where the palatal bone is prominent, forming an arch, and extending far back, "vacuum cavities" should always be avoided as they interfere with the success of the plate. Simply raise the plate entirely clear of it, but allow it to extend beyond, at that point, far enough to find a resting place.

When the upper jaw is very prominent and the lip short, and the patient shows teeth and gums, often quite high, the artificial gum must be very thin, high and without seams. Continuous-gum work is the best in these cases, for the teeth can be set under the margin of the gums; the porcelain gum can be made thin as desired and yet strong, as it is baked to the plate, and you have a perfect denture. Some may say, use a gold or rubber plate and set the teeth (plain) against the margin of the gums. But you will have a weak denture, and one that is not so firm as if the plate were carried over the outside of the process. Besides, where the cuspid teeth have been extracted a year or more, there is an absolute necessity for making the gum fuller and higher at those points than elsewhere, and this can, in such cases, be done only with this style of work.

When the upper teeth and lower anterior teeth remain and the patient requires masticating surface, the insertion of a partial lower set is necessary. In doing this, the attempt is often made to relieve the pressure and wear of the anterior teeth by making the artificial teeth sufficiently long. This is always a mistake; the pressure of natural teeth on the posterior artificial teeth results in constant discomfort till the gums have yielded to the pressure, so as to let the teeth down sufficiently to allow the anterior teeth to meet again. Better let them meet at this point at first; and, if the anterior teeth have become shortened by wear, "shoe" them.

In many interspersed partial cases the pressure is allowed to bear on the artificial teeth when it should, if possible, be left on the natural teeth, thereby preventing excessive pressure on narrow surfaces of gum. More depends upon the proper articulation than anything connected with the success of artificial dentures.

Three rules essentially cover the ground: (1) Never allow pressure on the six anterior teeth; (2) Never, in full upper plates, allow the pressure to be greater on one side than the other; (3) Never allow a second or third lower molar, which has projected forward so that its face shows, to meet an artificial tooth at that angle, as it will surely crowd forward the upper plate, the same as the meeting of the anterior teeth.

As a rule, a full lower plate is more comfortable and useful than a partial, because the pressure is distributed equally over the whole jaw.

Drs. Swain, Taylor, Ames and others entered into the discussion, when the subject was passed.

Dr. J. Frank Marriner, Ottawa, read a paper entitled

MAKING AND TEMPERING INSTRUMENTS.

He spoke of the elegant shape and fine finish of instruments furnished by the dental depots, but which are comparatively useless from lack of proper temper. This every dental practitioner should be able to remedy, and it can be done at little outlay for outfit, but it requires practice, care, and judgment. Judgment is necessary to recognize the proper degree of heat, as the steel should not be over-heated, neither should it be hammered until it is at the right heat. The force of the hammer should be evenly divided, the instrument being turned at every blow, each blow bringing it nearer to the ideal form seen with the mental vision. It should be left larger than desired, room being left for grinding, but the file should never be used. Sand-paper and emery must be used to make it clean and bright. Having a solid flame burner, the instrument must be held near the side of the flame which is directed upon it with the common mouth blow-pipe, and evenly rotated till of a cherry red, then plunged into cold water. Experience alone will enable one to judge of the temper by the color in water—if not just right it must be gone over again, perhaps several times. It is then dressed with sand-paper and emery again, being very careful not to break it. The blade, neck, and shank are now all of the same temper, and the temper must be drawn from all but the blade. Forcing the delicate blade into a piece of clean, soft pine-wood, the instrument is held in the flame directed by the blow-pipe and watched closely as the blue color passes up the length, plunging it quickly into cold water. If the operation is successful, the neck will have a fine spring temper, and the blade a keen cutting edge. It is still too large and must be dressed down by grinding on a stone kept constantly wet, held square and firm, without rotating or trembling. It is important to have your instruments light, delicate, and springy. Chisels should make a clean cut shaving; scalers should be—comparable with those of Geo. H. Cushing. It is useless to say more.

Dr. Cushing, in opening the discussion of this paper, emphasized the importance of being able to duplicate a broken instrument, or to give the proper temper to otherwise fine instruments. Also not to over-heat, never to a white heat but only a cherry red, or the lowest possible heat at which it will harden. The steel must be slowly turned by quarters under the hammer so as to be compacted, not spread out. Delicate instruments must be kept with a keen edge like a razor, which will shave down the tissues. For this purpose a broad whetstone must be at hand and frequently used.

In answer to questions, Dr. Cushing said that it should be Arkansas stone, and from 1½ to 2 inches broad, so as to have a broad sweep; that if the blade is very small the bit of wood may be wet before heating the instrument for drawing the temper. If heated beyond the proper point, the steel will be hard and brittle, which is wanted tough.

Dr. W. N. Morrison said that with the requisite skill in this direction a large stock of broken instruments become a most valuable possession, worth ten times what they were originally, when the shank and the point were not properly balanced. He did not agree with the paper that the instrument should be forged larger than wanted. He preferred to have them remain as they came from the anvil, the outside shell of steel compressed under the hammer being harder than that which is beneath. He imbeds the edge of the blade in a chunk of lead instead of wood, and carries the handle over a blue bunsen flame (not with the blow-pipe) so that he can look down on it. In this way the color can be watched more accurately. As the blue goes down towards the blade it takes a straw color as it reaches the lead, at which instant it must be plunged quickly into water kept cold with a little piece of ice. For drills he uses the shanks of broken off burs holding them in a pin-vice in which a hole has been drilled to take the bit and grasp it firmly.

Dr. Taggart heats to a cherry red and thrusts into a piece of soap. For a store of valuable information on reliable authority he recommends a work issued for free distribution by the Crescent Steel Co., Chicago,—Miller, Metcalf & Baker. For a very hard temper, like the "black diamond" of steel, and for glass cutting, the point is plunged into a mercury bath.

Dr. Wassall, for drawing the temper from swiss broaches, puts a dozen or so in a vial and heats on the stove; in this way the color can be watched, which is not possible when they are imbedded in the sand, lime, etc.

Dr. Freeman uses the file to get the instruments to the exact size and shape wanted, and then taps on the anvil again. Many needed appliances can be bought cheaper and better from the wholesale jeweler than from dental dealers. He holds the blade between pliers instead of imbedding in wood, lead, etc.

Dr. Swasey said the trouble with instruments is that we don't know just what we want, and if we do, we don't make it.

Dr. Crouse said it did his soul good to hear his brethren discussing the practical work of getting ready to serve their patients, instead of trying to find out whether or not they were physicians!

Dr. Marriner closed the discussion, after which Dr. J. J. R. Patrick read a paper entitled

THE RATIONALE OF CONSTRUCTING AND ATTACHING ARTIFICIAL CROWNS TO NATURAL ROOTS OF TEETH.

He said that it must be borne in mind that we are dealing with the broadest end of the root always—with the base of a cone; driving down towards the tapering point; we have to deal with the base, not with the apex, and the further down we carry it the further it is from a fit. The second point to be remembered is that all roots have a canal, and that this canal follows the external form of the root, and the post must take the tapering shape of the canal; when there is plenty of material, as in the root of a central incisor, this is comparatively easy. Third, the band must go as low down as possible, and yet have no open space at the lower edge. If it is borne in mind that every root has an undercut on the lingual side, the buccal side being sound, it will be seen that if the root is beveled a little at the edge and the band put on sideways and tilted over on the bevel, it will slip over and fit perfectly, and will not let the phosphate get out; the liquid may come out but not the zinc. Most of the posts on the market are too large for root canals; a delicate post with a tapering screw is easily fastened. If the post is fastened in the crown and set in the root with cement, there is an element of weakness, and it will pull out.

Dr. Patrick, in continuing the paper, illustrated it at every point on the blackboard, the illustration making clear many points that mere description would fail to bring out. He spoke of the excellent condition of many roots after the crown has completely wasted away, the cementum becoming very active by the law of compensation. In one case, as many as fourteen crowns were put on firm, solid roots of which the crowns had entirely wasted away. In one tooth the anterior and posterior roots of a molar had parted company and received separate ferrules, giving good satisfaction. He illustrated modes of crowning roots which, by accident, had been broken off far below the gum, and even below the margin of the alveolus. In one case it was necessary to make a cylinder through which, with wax, to get an impression of the fractured surface.

The paper was passed without discussion.

Dr. G. V. Black tendered his resignation as President of the State Board, which was accepted with regrets.

The committee appointed to witness the dissection of fœtal jaws, by Dr. J. J. R. Patrick, in illustration of the paper read by him on Dental Morphology, reported that though the time spent had not been great, yet the positions maintained had been shown clearly to the naked eye.

The hour for the election of officers having arrived, Dr. Swain, seconded by Dr. Brophy, asked the unanimous voice of the society in the nomination of Dr. Geo. H. Cushing to the office of President. He had been one of the founders of the society, and had been at every meeting since; it was therefore most fitting that he should preside at the celebration of the twenty-fifth anniversary. The nomination was received with enthusiasm and the election was unanimous with a rising vote.

Chicago, Mattoon, Quincy, Lake Bluff, Bloomington, Rockford were put in nomination for the place of meeting, Quincy receiving a majority of votes on the first ballot.

Dr. J. J. Jennelle, Cairo, was chosen Vice-President, Drs. Newkirk, Pritchett, and Ames being re-elected respectively to the offices of Secretary, Treasurer, and Librarian.

Compilations.

"Gather up the Fragments."

TREATMENT OF FRACTURES OF THE INFERIOR MAXILLARY BONE.

BY A. B. ROBBINS, M.D., D.D.S.

When the lower jaw bone has been fractured, make a careful examination, and adjust the parts so that the teeth will correctly articulate, to guide in the subsequent operations. If the fracture is simple, set the bone so that the parts are in proper position, confirming it by seeing that the teeth articulation is correct; hold the bone firmly with the hand, without changing position, except opening the mouth, until an impression of the inferior teeth has been taken. For that purpose I prefer beeswax, or some good modelling compound, made very soft and held in a cup of the right size and shape. Now, place a soft thin piece of gutta-percha upon the grinding surface of the upper teeth and close the lower teeth into it, articulated; put a bandage, supporting the lower jaw properly, around the head and secure it; dismiss the patient until you need to see him again. As quickly as possible, make a splint of metal or rubber that will cap all the lower teeth, carrying it down as low as you can inside of lingual surface, and also the outer side of the teeth. Make the upper surface of the splint articulate with the superior molars and bicuspids, and thick enough to leave an opening in front through which to drink and take liquid food. Place the splint in place, when, if properly made, it will retain the fractured jaw in position, if there are teeth enough; should there not be, drill holes through the sides of the splint and ligate to enough teeth to retain it. Make a skull cap bandage with two tabs, one upon each side, say about the temple, to which fasten buckles; have another bandage made to properly fit the chin and jaw, with tabs or prolongations, one upon either side, to fasten into the buckles of the skull cap, place them in position and fasten just tight enough to comfortably and firmly hold the jaws together. If any teeth have been knocked out or loosened have them all in proper place in the jaw before the impression is taken. Of course, if much time has elapsed after the accident, before the patient is seen, the knocked out teeth will have to be opened, pulp removed and filled, but be certain to replace and save all the teeth. In all cases use antiseptic treatment from the first, thoroughly wash the mouth before placing the splint in place, and while on wash out the mouth frequently with listerine, preferably using a syringe to wash out all around the splint, loosening the bandage for that purpose, as the splint, if properly holding the teeth, will prevent any harm to the fractured parts. After 4 to 6 days, carefully remove the splint and thoroughly cleanse it and the mouth, place the splint in a weak solution of bichloride mercury, say $\frac{1}{1000}$. It will be better to repeat this now daily until the union is strong enough to permit the bandage to be removed or laid aside. Usually it can be taken off during the day, after two weeks, but worn at night for a time longer. The splint in muscular persons ought to be kept on for six weeks. In compound fractures, the proceeding at first needs to be different. My method is to place a soft piece of sheet gutta-percha into the mouth, carefully articulating the teeth and holding the fractured portions in position until the gutta-percha is hard enough to hold the jaws together. Now take some means of holding the lower jaw in adjusted position, by external appliance, so the mouth can be opened. Although I have resorted to many devices, I know of nothing that gives me better satisfaction than plaster-of-Paris, using it just as you would for mouth impressions; take an impression of the jaw and chin, let the plaster remain until firmly set and then until the jaws are opened, the gutta-percha removed and an impression of the teeth taken; return the gutta-percha interdental splint, after first cutting out such portions as interfere with the tongue and cheeks; bandage the jaws as before; in bad cases retaining the plaster splint until the dental splint has been made and properly adjusted; then proceed as in cases of simple fracture. If the dental splint fails to hold the fractured parts in position, continue to employ the external plaster splint.—*Archives of Dentistry.*

Editor's Specials.

"Write the Vision and make it plain."

DR. GEORGE W. KEELY.

WITH a saddened sense of personal bereavement, we write that Dr. George W. Keely is dead. To say he was a personal friend of the writer would seem very tame and impart no news, for he was a friend to his professional brethren in general.

The announcement of his death was a shock to us all, and the manner of his death increases and prolongs the shock. It is not always easy to say "Thy will be done." But above the darkest cloud is light, sunshine.

Dr. Keely was born at Oxford, Ohio, Oct. 22, 1822. In 1839 he entered the dental office of Dr. John Allen, of Cincinnati, with whom he spent two years. Returning to Oxford in 1841 he started a dental office at that place. After having been in active practice for about twelve years, in 1853 Dr. Keely graduated at the Ohio College of Dental Surgery. He was present at the meeting of dentists first held at Niagara Falls in 1859 where the foundations were first laid for the organization of the American Dental Association. He was elected president of the association at Philadelphia in 1876, and for a number of years prior to his death has held the position of treasurer of that association. He was an active mover in the organization of the Ohio State Dental Society, was once its president and for years it treasurer. He was an active or honorary member of the Mississippi Valley, Mad River Valley, Kentucky, Indiana, Missouri, Illinois, and Wisconsin State Dental Societies, and of the New York Odontological

Society. He was one of the trustees of The Ohio College of Dental Surgery, and lecturer on Irregularities of the Teeth in the same institution. He was married in 1851 to Miss Susanna Wells, of Cincinnati, but who died in 1856. Dr. Keely was again married in 1861 to Miss Cornelia Cone, of Oxford, O. Of the three children by his first wife, but one, Dr. Chas. I. Keely, of Hamilton, survives him, and of the eight by his second wife, but three remain to mourn his loss.

Our acquaintance with Dr. Keely began in 1853, and was intimate from that date forward. He was a true and trusted friend, and we think we have reason to know the manner of man he was, the strength of his friendship, the generosity of his nature, the integrity of his purposes and the deep sincerity of his life. He was a man of solid attainments; a man of rare character and genuine worth; a recognized master in his specialty of dentistry, and yet characterized by that modesty and self-forgetfulness and simplicity that so often accompanies true greatness. He was an enthusiast in his calling, and saved neither toil, time, nor expense in keeping abreast with the progress of the profession. He never had a secret that would be helpful to others, that he did not labor industriously to communicate to his professional brethren. Of the extent and character of his writings, the readers of The Ohio Journal are enabled to judge from what have appeared in its columns during the eight years of its existence.

His loss is keenly felt, and the Ohio Journal extends, with its readers, sincere sympathy to the bereaved wife and children.

"Were a star quenched on high,
  For ages would its light,
Still traveling downward from the sky,
  Shine on our mortal sight.
So when a good man dies,
  For years beyond our ken,
The light he leaves beyond him lies
  Upon the paths of men."

THE ACCIDENT.

Dr. Keely's death resulted from an accident, an account of which we copy from the *Oxford News:*

"Wednesday evening Dr. Keely went to his office in the Cone Building to attend to some correspondence, but before seating himself to the work he went to the rear of the third story to repair a telephone wire which connects the office with his residence. While leaning out of a window endeavoring to draw the wire in with a common hoe, and holding an open pocket knife in his hand, he lost his balance and fell to the pavement about thirty feet below. The knife by some means was plunged into the back of his head to the depth of a half inch. It is supposed that he fell about eight o'clock, and owing to the fact that the portion of the yard in which he fell is unfrequented he was not discovered until about 11 o'clock. He could not have remained unconscious for a long time, for the Doctor said that when he realized where he was he heard the merchants who do business in that locality closing up for the night, but was unable to make them hear his feeble cries for help. By a great effort he managed to crawl on his hands and knees to the entrance door on Main street and attracted the attention of the night watchman, H. L. Kyler. His face was completely covered with blood and the watchman had not a little difficulty in recognizing him. He at once assisted the Doctor home, where Dr. E. L. Hill was summoned immediately.

Dr. Keely at once informed the surgeon that in attempting to extricate the knife blade from his head he had broken it off. Upon examination it was found that about half an inch of the blade remained in his skull. Great difficulty was had in removing this, and finally it was necessary to chisel it out. It was broken in two pieces, the larger piece about three-eighths of an inch and the smaller one about one-eighth of an inch long. It was also learned, upon further examination, that three ribs were broken and that he was otherwise injured internally, but it was hoped at first that he would recover. He retained his consciousness throughout, and suffered no pain at all. This was regarded as a fatal symptom. Yesterday morning he was found to be in a critical condition, and at about noon all hopes of his recovery were lost. He passed quietly away at two o'clock Friday afternoon, surrounded by his family."

RESOLUTIONS ADOPTED BY THE AMERICAN DENTAL ASSOCIATION, LOUISVILLE, AUG. 30, 1888, ON THE DEATH OF DR. GEO. W. KEELY.

The committee to whom was referred the matter of resolutions upon the death of Dr. Keely, beg leave to submit the following:

WHEREAS, It having pleased Almighty God in whose hand is the breath of every living thing, to remove suddenly from the scene of his toils and his honors our friend and associate, Geo. W. Keely, D.D.S.; therefore be it

Resolved, As the sense of this Association, that in Dr. Keely's death this Association has lost one of its oldest and most valued members, a former President, and for many years its Treasurer. Genial and urbane in disposition, kind and affectionate in his family, eminently successful in his calling, Dr. Keely was one whom we loved as a man and honored as a dentist. Ourselves marching to the eternal world, let us loiter for a moment on the busy highway of life to hang this garland on his tombstone.

Resolved, That these resolutions be engrossed upon the records of this Association and a copy be forwarded to his family.

Committee { H. A. SMITH, Cincinnati.
E. T. DARBY, Philadelphia.
G. J. FRIEDRICHS, New Orleans.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 513 Jefferson St., Toledo, O.]

CLEANING TEETH.—Having removed all the calculary deposits, the polishing with the pumice powder comes next. The wetting of this with hydrogen peroxide instead of water has been found of great value.—DR. M. L. RHEIN in *N. Y. Society*.

METHOZIN AND ACTEANILID.—Antipyrin and antiferbin are to be known hereafter as methozin and acetanilid, to avoid the copyrighted titles. These agents, as well as other antipyretics, are developing new possibilities in the neuroses. Their use in neuralgia, chorea, migraine, etc., is growing more common.

GUTTA-PERCHA FILLINGS.—Before inserting gutta-percha fillings, the cavities should be thoroughly dried and free from moisture for the gutta-percha adheres to dry walls while it has a tendency to shrink away from moist surfaces, inducing more moisture by capillary attraction and causing a defective filling.

Devitalizing Paste.—In devitalizing pulps the greatest success has attended the use of

Arsenic, - -	parts 1	To remain in 24 hours.
Hydr. Cocaine, -	" 4	
Lanolin, - -	" 5	

—Dr. W. A. Johnston in *Ill. Trans.*

A New Tooth Wash.—The root of geranium suelda (Bolivia), dried and coarsely powdered, is steeped in twice its weight of 98 per cent. alcohol, thus affording a fine, red tincture. Ten drops of the preparation in a glass of water will make a mouth wash surpassing anything known. It may also be applied with great benefit to decaying teeth with a little pledget of cotton.—*Ch. & Dr.*

To Move Resisting Teeth.—Dr. H. A. Smith says: Certain teeth are very resisting and not easily moved, but drilling away part of the alveolus opposite, either inside or outside, will remove at least much of this resistance. In moving posterior teeth, pass the drill down and cut away some of the alveolar wall, being careful to avoid, if possible, striking the periosteum. In this way you will find that the teeth will get started much quicker and move easier.

Cast Aluminum Plates for Regulating.—Dr. F. Abbott says: I have used cast aluminum plates to good advantage for these purposes. The plate is cast over the model and fits more accurately than most other plates. Then you can insert screws, if you choose, as the metal is not hard, yet strong enough to hold them. The plate can be firmly held in place by running the metal over the molar teeth as far as the necks and driving it solidly down.

Tooth Powder Formula.—Dr. E. G. Betty gives the following formula for a good tooth powder:

℞ Prepared chalk.
Precipitated chalk, aa ℥ i.
Pulverized orris-root.
White sugar, aa ʒ ii.
Pulp of cuttle-fish bone.
Wintergreen and cardamon, aa q. s.

An Application for Devitalized Pulps.—When powdered tannin is dissolved in alcohol to the consistency of ordinary maple syrup, it is very useful for application to a devitalized pulp, to abstract the water, and diminish the size of it. After removing the arsenic, we wipe the cavity with dialyzed iron, then apply a bit of cotton moistened with the above named solution, and seal the cavity with gutta-percha. Punch two or three holes in the gutta-percha, and let it remain in the tooth one week. The pulp can be removed, and the root filled at once.—*Dental Review.*

Forming Cavities in Porcelain Teeth.—Dr. F. E. Buck uses an old engine bur, ground in the shape of a spade drill, the tooth having been invested in plaster in one side of a flask, leaving that portion exposed where he intends forming the cavity, then, with a corundum wheel in the engine, he grinds out the shape he wants the filling, thus securing smooth margins for the cavity. Now applying a mixture of spirits of camphor and spirits of turpentine, equal parts, he keeps the tooth wet with this, holding the engine bit in left hand, and with a small riveting hammer, lightly and rapidly taps the drill, at the same time rotating it back and forth, and in a very few minutes he has a well formed cavity with smooth margins.—*Archives.*

Filling Roots.—The root or roots being thoroughly cleansed, and syringed with a solution of mercuric bichloride in hydrogen peroxide (one grain to the ounce), are thoroughly dried with hot air, bibulous paper cones, or the galvano-cautery. A few fibres of cotton wound around a delicate broach and covered with chloropercha solution is passed through the entire length of the canal, giving the very dry sides of it an opportunity to suck in the solution. A solid cone of gutta-percha is then forced to the end of the root and packed home with chloroform, and over this a small amount of oxyphosphate is placed, and the tooth is ready for permanent filling, everything being performed at one sitting.—Dr. M. L. Rhein in *N. Y. Society.*

A Case of Cocaine Poisoning.—Dr. Broughton says: A dentist placed in a tooth cavity a small piece of cotton containing three drops of a 20 per cent. solution of muriate of cocaine. Upon the patient's arrival home she said to the family that she felt tired and must go to bed. When I arrived, which was in a few moments after she had taken to her bed, I found her entirely unconscious, breathing very irregularly, and only 12 inspirations to the minute, her pulse 47 to the minute, pupil on the right side (side on which the cocaine was used) was very much dilated, tongue drawn to the left side, and the whole system in an extreme state of relaxation. She responded not at all to a pin forced into her right arm, and all efforts to arouse her to sensibility were in vain. The free administration of brandy by the mouth and $\frac{1}{100}$ grain of strychnia hypodermically was followed by complete recovery in two hours.—*North Carolina Med. Jour.*

CAPPING EXPOSED PULPS.—If the exposure is of but very short duration and has not given much pain, the removal of foreign substances, washing with tepid water, and dusting with iodoform, can be immediately followed by capping with several thick layers of chloro-percha, and oxyphosphate of zinc. Before endeavoring to ascertain the condition of a tooth pulp, flood the cavity with bichloride of mercury, one in five hundred, it having been first dropped on a warm slab to prevent a shock. Remove all decay. Do not wound the pulp unless pus is present; if this is the case, puncture and allow the pus to escape, wash with eucalyptol, dust with iodoform and cap immediately. Pain should not follow the capping of exposed pulps. When the inflammation of the pulps has been of some days standing and the pulp is engorged, care must be taken not to permanently seal it too soon; generally two or three treatments will suffice.—DR. L. OTTOFY in *Ill. Society.*

TO DEVITALIZE PULPS.—Excavation is not essential, but the taking out of all the débris is. The rubber dam should be applied and the cavity dried as thoroughly as possible. Then, the pulp being exposed completely at some point, a minute particle of paste should be directly applied, covered with a small cap cut from thin rolled tin or some other metal, and made concave by pressure with the rounded end of an excavator, and the cavity carefully filled with wax, gutta percha, or some impermeable covering. We have found modelling compound an excellent material when warmed. If this course is followed, pain will be the exception and not the rule, and should it unfortunately succeed it will be very fleeting in its character. When the pulp exposure is from attrition or fracture, and there is no cavity of retention, a small concave hat may be made of wax, the paste placed on it, and the tooth being carefully dried and the wax warmed, it may be made to adhere sufficiently long for devitalization.—Dr. W. C. Barrett in *Ind. Prac.*

Method of Taking Impressions of Difficult Cases.—Dr. A. G. Bennett's method of securing accurate impressions in difficult cases is as follows: In cases where an isolated tooth is required, and the space is narrow, or from other causes there is difficulty in securing a correct impression of the space, he first fits into it the artificial tooth that is to be used, in the position it is to occupy, and taking the impression while it is in place, letting it form part of the impression. In cases where the teeth lean in excessively, he suggests building a wall, quite wide at its base, of yellow wax, upon the impression cup sufficiently high to nearly cut through the plaster (he prefers plaster for taking impressions in these cases), when the cap is pressed in place. After the plaster of the impression has hardened, the cup is removed, leaving the impression in place in the mouth. The soft wax is readily removed, and there is then no difficulty in removing the impression in sections. The wall of wax is placed so as to divide the impression into sections convenient for removal.—*Ind. Prac.*

To Replace Teeth on Celluloid Plates.—Dr. J. H. Warner says: Allow me to describe my method of replacing teeth on celluloid plates. I prepare the plate just as if it were rubber, except that I cut away as little as possible of the plate. Wax up the tooth, or teeth, if necessary, but, if possible, place heavy (No. 60) tin foil over the tooth, or teeth, on both the labial and lingual surfaces, and use no wax. Be sure and leave the lingual surface of the plate bare, and then when the flask is separated, take enough tin foil to equal in bulk twice or three times the amount of lost plate substance. Spread this over the lingual portion of the plate that is thickest. Bring the flasks together, and press the same as for a new plate. The tin foil forces the surplus celluloid around the tooth, or teeth, and the work is done, and well done. No new celluloid should be added in any case. Old celluloid and new will not unite; but by the process described there is only one piece, and a plate can be mended as easily as a rubber plate, and better than in any other way. Celluloid can be properly worked only between metal plates. Worked in plaster alone it is worthless.

GUTTA-PERCHA.—DR. J. FOSTER FLAGG says: If you want to keep gutta-percha good, you must put it into salt water and keep it there. I have now good gutta-percha that is eighteen years old. I made an experiment four months ago for the purpose of testing it before the class; I took some of this eighteen-year-old gutta-percha that I kept in salt water and tested it, and it answered every test as well as the new gutta-percha which I had just obtained.

Gutta-percha in some cases "rots," and as it rots it grows spongy and takes in the fluids of the mouth. When a gutta-percha filling is so exposed that you bite down upon it, it is beaten down by occlusion, and if the walls of the tooth give way it is not by true expansion, but simply by pounding upon the gutta-percha. It is very necessary that the end of the packing instrument should not come in contact with the flame of the lamp. If it does, the touch of the instrument smirches the gutta-percha. The instruments must either be wiped off, or, better still, have the gutta-percha warmer so arranged that the blaze does not touch the points.

METHOD OF USING THE "BING" STYLE OF TEETH IN CONSTRUCTING BRIDGE-WORK.—DR. A. G. BENNETT says: These teeth are mostly bicuspids, and are made to closely resemble in shape the natural teeth; the pins are on the proximal surface of each side. In mounting them for bridge-work, first grind away the bulging portion of the lingual surface, and sufficiently far on each approximal surface to embrace the pins which pass through holes made to accommodate them; for convenience this collar is made in two pieces, joining about the middle of the lingual surface. When the collar is fitted and in place, the pins are riveted over it by splitting them with a sharp instrument. The tooth is now invested, and the pins of each side and those joining at the centre of the collar, securely soldered. After all the teeth to be used have been thus mounted they are arranged in place, the ends of the collars being filed thin, if need be, to permit the teeth to approximate, invested and soldered together. After the bridge is finished, pack gold (preferably by means of the electric plugger) neatly into all spaces that may exist between the teeth. The bridge is seemingly strong, there is no gold exposed, it is cleanly and more readily constructed than the usual method of using thin porcelain facings and forming the lingual and masticating surfaces with metal.—*Ind. Prac.*

To Restore the Polish of Instruments.—Some weeks ago the stopper of a bottle of corrosive sublimate which was carried in a satchel along with a lot of loose instruments, came out and the chemical was emptied into the bag. The fact was not noticed at the time, and the next day the instruments were found covered with rust and in some instances quite badly eroded. How to get the instruments clean without sending them to an instrument maker was a question which I determined to settle by experiment. The instruments consisted of dressing forceps, scissors, needle holder, needles, several bistouries, scalpels, etc., the knives all having tortoise shell or ivory handles. Without going into the details of the experiments I will give you the method of procedure which yielded perfectly satisfactory results. A saturated solution of chloride of tin in distilled water was made and with this a number of large test tubes were filled to a height sufficient to admit of the immersion of the blades of the knives, the forceps, etc. The instruments were inserted and left over night. The next morning they were found quite clean and of a mat-silver whiteness. Rinsing in running water, wiping and rubbing with a chamois completed the operation. Chloride of zinc solution gave pretty good, but not nearly so satisfactory results. —F. L. J. in St. L. *Med. and Surg. Jour.*

Plastic Filling.—Dr. H. B. Tileston in the Kentucky Association recommended the use of a filling material composed of amalgam and oxyphosphate of zinc in proportions not fixed, but varying according to the case in hand. He says: "I first mix the amalgam as usual except do not express the mercury unless the excess is considerable. I then mix the oxyphosphate quite thin and quickly incorporate it into the pellet of amalgam, working it thoroughly with a very stiff spatula; I then roll the pellet between my thumb and finger and immediately introduce it into the previously dried cavity, press into place and burnish to the edges, trimming the excess with the burnisher." He claims that it combines the most desirable properties of both and eliminates their objectionable features. The spheroidal tendency of the amalgam is entirely overcome by the presence of the cement, while the solubility of the cement is almost, if not entirely, counteracted by the stability of the amalgam. The compound does not set so quickly as cement alone, but is sufficiently hard in five minutes to be burnished. When hardened it takes a metallic finish under the burnisher. He advises its use where cement is too temporary, where amalgam or other metallic fillings cannot be securely inserted, in proximal cavities of deciduous teeth, and for setting crowns.

Excision of the Inferior Dental Nerve for Neuralgia.—Dr. R. Y. Henley says: The subject was a woman aged 50 years, naturally of a strong constitution, but emaciated to a considerable extent by long and continued suffering. For more than a year she had been treated for neuralgia of the inferior dental nerve, in a constitutional way, but without avail. The patient had lost the inferior teeth, which removed all fear that the nerve branches supplying those organs would, in any way, be injured and consequently produce any disastrous result to them. Assisted by Drs. W. S. Elkin and L. D. Carpenter, we proceeded to remove a portion of the nerve in the following manner: We first made an incision into the soft parts below the base of the inferior maxillary, dissecting the parts from the bone until it was fully exposed over the inferior dental groove. We then made an incision into the bone above and below the groove by means of a circular saw in the dental engine. We then proceeded with a semi-circular chisel to remove the bone, beginning near the mental and going toward the posterior dental foramen for about two inches, being careful to go below the floor of the groove and to some extent destroying it and removing about two inches of the nerve. The hemorrhage which resulted from the inferior dental artery was easily checked by the application of persulphate of iron, and gave very little inconvenience. After sponging the wound, the soft parts were brought into position by the use of surgeon's silk and adhesive plaster, powdered iodoform put on the wound and bandaged. The wound healed by first intention and the patient has never had a return of neuralgia.—*Archives.*

Societies.

"Wherewith one may edify another."

OHIO STATE DENTAL SOCIETY.

The fourth annual meeting of the Ohio State Dental Society (re-organized) will be held in Cincinnati, October 16, 17, 18, in Lincoln Club Hall, Garfield Place and Race street.

A cordial invitation is extended to the profession at large to attend and bring their families. Railroad rates are very low on account of the Centennial Exposition, an attraction not to be missed.

E. G. Betty, *Ch. Ex. Com.*

PROGRAM.

1. Obtunding Sensitive Dentine.—Levitt E. Custer, Dayton.
2. Pericementitis.—F. S. Maxwell, Steubenville.
3. Machinery used in Dentistry.—C. R. Butler, Cleveland.
4. Implantation, Replantation and Transplantation.—H. A. Smith, Cincinnati.
5. Examining the Teeth and Jaws of Skulls.—E. G. Betty, Cincinnati.
6. Dental Education.—J. Taft, Cincinnati.
7. Medical Education for Dentists.—C. M. Wright, Cincinnati.
8. Voluntary Papers.

CLINICS.

Methods of Cleaning Teeth.—Wm. Taft, Cincinnati.
Implantation.—M. H. Fletcher, Cincinnati.
Operative Dentistry.—D. W. Clancy, Cincinnati.

CENTRAL ILLINOIS DENTAL SOCIETY.

The seventh annual meeting of the Central Illinois Dental Society will be held at Lincoln, Tuesday, Oct. 9, 1888, continuing three days.

The following is the program of essays:

Dental Hygiene.—Dr. H. H. Fitch, Pekin.

Management of Children in the Dental Office.—Dr. Garrett Newkirk, Chicago.

Amalgams.—Dr. C. R. Taylor, Streator.

Clinical Lecture on Amalgams.—Dr. C. P. Pruyn, Chicago.

Remedies.—Dr. E. K. Blair, Waverly.

Prosthetic Dentistry.—E. D. Swain, Chicago.

Question Drawer.—Conducted by J. D. Moody, Mendota.

Interesting clinics will be given in connection with the above, and it is desired to have as large an attendance as possible.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The fifth regular meeting of the National Association of Dental Faculties was held in Louisville, Ky., Aug. 27, 28, 29, 1888.

The following colleges were represented: Baltimore College of Dental Surgery, Boston Dental College, Chicago College of Dental Surgery, Kansas City Dental College, Missouri Dental College, New York College of Dentistry, Ohio College of Dental Surgery, Harvard College—Dental Department, Pennsylvania Collge of Dental Surgery, Philadelphia Dental College, University of Iowa—Dental Department, University of Pennsylvania—Dental Department, Vanderbilt University—Dental Department, University of Michigan—Dental Department, Northwestern College of Dental Surgery, Louisville College of Dentistry, Northwestern University—Dental Department, Indiana Dental College.

President A. O. Hunt in the chair. J. E. Cravens Secretary.

The subject of the extension of length of college terms was the principal topic of discussion, and numerous resolutions bearing on the subject were introduced, discussed, amended, laid on the table, laid over for one year, or adopted.

On motion of Prof. C. N. Peirce, the roll of colleges was called for the purpose of ascertaining how many delegates had received instructions from their respective colleges; and on motion of Dr. McDowell, the roll of the eleven instructed delegates was called, with the following result:

Harvard University — Dental Department, 3 years of 9 months each.

Kansas City Dental College, 2 years, 6 months.

Missouri Dental College, 3 years, 7 or 9 months.

Ohio College of Dental Surgery, 2 years, 6 months.

Pennsylvania College of Dental Surgery, 2 years, 7 months.

University of Michigan—Dental Department, 3 years, 9 months.

University of Pennsylvania—Dental Department, 2 years, 7 months.

Northwestern College of Dental Surgery, 3 years, 9 months.

Louisville College of Dentistry, 3 years, 5 months.

University of Tennessee—Dental Department, 2 years, 5 months.

National University—Dental Department, 2 years, 6 months.

In view of the great diversity of opinion as to the proper length of time, ranging from ten to twenty-seven months, and of the fact that one-half of the delegates present had no instructions in the matter, definite action was postponed, and the following resolution, offered by Prof. Eames, and seconded by Prof. Cravens, was carried:

Resolved, That it is the sense of this meeting that the course of instruction in all colleges of this Association should be increased to three years of not less than five months each; and that delegates shall submit this question to their respective Faculties or college Boards, and reports of their action made to this Association at its next annual meeting, in order that final action on this question may be had.

Among the resolutions *held over for one year*, bearing on this subject, are the following:

From the Executive Committee.

Report.—Whereas, It is the sense of this Association that less than two years of study and instruction is insufficient to properly prepare any one for the practice of dentistry as demanded by the progress of the times; therefore

Resolved, That at least two years of *bona fide* study, and attendance upon two full regular courses of instruction, in separate years, be required before graduation.

From Prof. Howe, seconded by Prof. McDowell:

Resolved, To substitute for resolution adopted N. Y., 1884, the following: "Attendance upon three full regular courses, of not less than five months each, in separate years, shall be required before examination for graduating; and no student shall be graduated until at least twenty-eight months after his first matriculation."

By the same:

Resolved, To amend resolution adopted N. Y., 1884, by inserting in the place of "one year's privilege in a dental office," the words "one course of lectures in a dental college."

Offered by Prof. Howe, and seconded by Prof. Taft:

Resolved, That recommendation adopted N. Y., 1884, "That three years study of dentistry, including attendance upon two regular courses of lectures, be required previous to examination for graduation," be made mandatory.

Several other resolutions of similar report, but varying slightly in requirements, were laid over.

The following resolution, offered by Prof. Taft, and seconded by Prof. Brophy, was adopted:

Resolved, That hereafter a delegate representing a college of this Association shall be a member of the teaching Faculty of such college; and shall present properly executed credentials, specifying his authority to represent and act for such college before he shall be entitled to vote on questions before this Association. Carried.

Resolution offered by Prof. Guilford, and adopted:

Resolved, That where from sickness or death in his family, a student has been prevented from taking his intermediate examination, and of obtaining his certificate from the institution where his first course was attended, such student may be examined for entrance to the senior class of any college of this Association upon presentation of a certificate from the Dean, or Secretary, of the school at which said student attended such first course, assenting to such examination.

Prof. W. W. Foster, (Baltimore College of Dental Surgery,) offered a communication in regard to the privileges of a student who has failed in his junior examination, or who for any cause has failed to present himself for the same.

The communication was referred to a committee consisting of Profs. Fillebrown, Patterson, and Smith, their report being substantially to the effect that any college Faculty might examine a junior student as often as they chose, previous to the beginning of the next session; and that the student is entitled to as advanced a standing as his examination will warrant.

The committees on the preparation of college text-books reported, viz:

Operative Dentistry.—Prof. Fillebrown reported progress, the work being in the hands of the printer.

Orthodontia.—Prof. Guilford reported that the work would probably be issued by first of January, 1889.

Dental Embryology and Histology.—Dr. W. X. Sudduth was authorized to prepare and publish a work on these subjects.

The election of officers resulted as follows:

President, A. O. Hunt, Iowa City, Dental Department University of Iowa. Vice-President, L. D. Carpenter, Atlanta, Ga., Southern Medical College, Dental Department. Secretary, J. E. Cravens, Indianapolis, Indiana Dental College. Treasurer, A. W. Harlan, Chicago, Chicago Dental College.

Executive Committee.—Frank Abbott, Chairman, New York City. J. Taft, Cincinnati. S. H. Guilford, Philadelphia.

Committee, *ad interim.*—Thos. Fillebrown, Boston. J. Y. Crawford, Nashville. T. W. Brophy, Chicago.

The committee on schools was continued.

Adjourned to meet at time and place of American Dental Association, Saratoga, N. Y., Aug. 5, 1889, 9.30 A. M.

"MRS. M. W. J."

Books and Pamphlets.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A yearly report of the progress of the general sanitary sciences throughout the world. Edited by CHARLES E. SAJOUS, M.D., Lecturer on Laryngology and Rhinology in Jefferson Medical College, Philadelphia, etc., and seventy Associate Editors, assisted by over two hundred Corresponding Editors, Collaborators aad correspondents. Five volumes each containing about 550 pages. Illustrated with Chromo-Lithographs, Engravings and Maps. 1888. Philadelphia and London: F. A. Davis, Publisher. Agencies: The Oceanic Publishing Co., Sydney, N. S. Wales. J. A. Aiken, Cape Town, Cape Colony. Subscription price $15.00 for the five volumes, including THE SATELLITE, a quarterly journal in keeping with the character of the Annual.

The object of the Annual of the Universal Medical Sciences is to collate the progressive features of medical literature at large, and clinical data from countries in which no literature exists, and to present the whole once a year in a continued form, prepared by writers of known ability. The work is so comprehensive that a complete review could not be given in our limited space, but that the reader may obtain some idea of its contents we give the general subjects as they appear in each volume.

CONTENTS, VOLUME I.—Diseases of the Brain and Spinal Cord, by E. C. Seguin, M.D.; Peripheral Nervous Diseases and General Neuroses, by Charles K. Mills, M.D., and James Hendrie Lloyd, M.D.; Diseases of the Heart and Pericardium, by A. L. Loomis, M.D., LL.D.; Fevers, by J. C. Wilson, M.D.; Diseases of the Mouth, Stomach, Pancreas and Liver, by W. H. Thomson, M.D.; Diseases of the Intestines and Peritoneum, by W. W. Johnston, M.D.; Animal Parasites and their effects, by Joseph Leidy, M.D.; Diseases of the Blood and Spleen, Tuberculosis and Scrofula, by John Guitéras, M.D., Ph.D.; Rheumatism and Gout, by N. S. Davis, M.D., LL.D.; Diabetes and Diseases of the Suprarenal Capsules, by James Tyson, M.D.; Diseases of the Kidneys and Bladder, by Francis Delafield, M.D.; Urinalysis, Chyluria and Hæmoglobinuria, by James Tyson, M.D.; Psychological Diseases, by E. C. Spitzka, M.D.

CONTENTS, VOLUME II.—Surgery of the Brain and Nerves, by N. Senn, M.D.; Surgery of the Abdomen, by J. Ewing Mears, M.D.; Diseases of the Rectum and Anus, by Chas. B. Kelsey, M.D.; Surgical Diseases of the Genito-Urinary Apparatus in the male, by E. L. Keyes, M.D.; Diseases and Injuries of Arteries and Veins, by John H. Packard, A.M., M.D.; Fractures, Dislocations and Sprains, by Lewis A. Stimson, M.D.; Amputations, Excisions and Plastic Surgery: Diseases of Bones and Joints, by P. S. Conner, M.D., LL.D.; Gunshot and Punctured Wounds, by Hunter McGuire, M.D., LL.D.; Surgical Tuberculosis, Abscess, Carbuncle, etc., by John Guitéras, M.D., Ph.D.; Diseases of the Skin, by Arthur Van Harlingen, M.D.; Tumors, by Morris Longstreth, M.D.; Venereal Diseases, by F. R. Sturgis, M.D., assisted by A. F. Buechler, M.D.; Surgical Diseases, by Christopher Johnston, M.D.; Anæsthetics, by Henry M. Lyman, M.D.; Surgical Diagnosis, by D. Hayes Agnew, M.D., LL.D.

CONTENTS, VOLUME III.—Ophthalmology, by William Thomson, M.D., assisted by Geo. M. Gould. M.D.; Otology, by Chas. S. Turnbull, M.D., Ph.D., and Chas. L. Weed, A.M., M.D.; Diseases of the Nose and Accessory Cavities, by Chas. E. Sajous, M.D.; Diseases of the Pharynx, by D. Bryson Delavan, M.D.; Diseases of the Larynx, Trachea and Œsophagus, by J. Solis Cohen, M.D.; Diseases of the Thyroid Gland, by John Guitéras, M.D., Ph.D., Diseases of the Lungs and Pleura, by James T. Whittaker, M.D.; Inebriety, Morphinism and Kindred Diseases, by Henry M. Lyman, M.D.; Oral Surgery, by James E. Garretson, M.D.; Dental Pathology and Therapeutics, by W. Xavier Sudduth, M.D., F.R.M.S.; Prosthetic Dentistry and Orthodontia, by S. H. Guilford, D.D.S., Ph.D.; Surgical Dressings, by Charles Wirgman, M.D.; Chiropodistry, by C. C. Davidson, M.D.

CONTENTS, VOLUME IV.—Diseases of the Uterus, by Paul F. Munde, M.D., Egbert H. Grandin, M.D., and Brooks H. Wells, M.D.; Menstruation and its Disorders, by E. C. Dudly, M.D., assisted by Junius Hoag, M.D.; Diseases of the Ovaries and Tubes, by William Goodell, M.D., and W. Constantine Goodell, M.D.; Diseases of the Vagina and External Genito-Urinary Organs, by William H. Parish, M.D.; Sterility: Pregnancy: Disorders of Pregnancy, by Theophilus Parvin, M.D.; Obstetrics, by William L. Richardson, M.D.; Puerperal Diseases, by Theophilus Parvin, M.D.; Dietetics of Infancy and Childhood, by Louis Starr, M.D.; Diseases of Infancy and Childhood, by J. Lewis Smith, M.D., and A. F. Currier, M.D., F. M. Warner, M.D., T. H. Myers, M.D., B. G. Cooke, M.D., F. H. Daniels, A.M., M.D., E. C. Wendt, M.D., S. Baruch, M.D., D. Brown, M.D.; Orthopædic Surgery, by Thos. G. Morton, M.D., and Wm. Hunt, M.D.; General Therapeutics, by William Pepper, M.D., LL.D., and J. P. Crozer Griffith, M.D.; Experimental Therapeutics, by Hobart Amory Hare, M.D.

CONTENTS, VOLUME V.—Medical Climatology and Balneology, by George H. Rohé, M.D.; Electro-Therapeutics, by A. L. Ranney, M.D.; Medical Chemistry and Toxicology, by J. W. Holland, M.D.; Legal Medicine, by Frank Winthrop Draper, A.M., M.D., Medical Demography, by Albert L. Gihon, A.M., M.D.; Hygiene and Epidemiology, by John B. Hamilton, M.D.; The Disposal of the Dead, by John G. Lee, M.D.; Anatomy of the

Brain, by E. C. Spitzka, M.D.; Anatomy, by W. S. Forbes, M.D.; Physiology, by H. Newell Martin, M.D., M.A., Dr. Sc., F.R.S., and W. H. Howell, Ph.D., B.A.; Growth and Age, by Charles S. Minot, M.D.; Technology, by W. P. Manton, M.D., F.R.M.S.; Histology, by W. P. Manton, M.D., F.R.M.S., Embryology, Anomalies and Monstrosities, by W. Xavier Sudduth, M.D., F.R.M.S.; Dental Embryology and Histology, by W. Xavier Sudduth, M.D., F.R.M.S.; General Pathology, by E. O. Shakespeare, M.D.; General Index, by C. Sumner Witherstine, M.D., assisted by Franklin T. Beatty, M.D., George F. Souwers, M.D., and Eugene L. Vansant, M.D.

Under the head of Oral Surgery we find Affections of the Soft parts, by Dr. J. E. Garretson, including tumors, harelip, surgical diseases of the tongue, diseases of the antrum and surgical diseases of the palate and jaws.

Dental Pathology and Therapeutics, by W. X. Sudduth, including original articles and abstracts on the advancement made in this direction during the past year.

Prosthetic Dentistry and Orthodontia, by S. H. Guilford. In this department is described methods of casting aluminum base, of making different varieties of crowns and bridge-work, and Dr. Angle's, and others', methods of regulating.

The department allotted to dentistry covers only about 115 pages, but has been well edited. In subsequent volumes we hope to see the subject more fully developed. The volumes are neatly bound, and the table of contents on the back of each is a great aid to the busy practitioner.

Altogether the work, for the first edition, is very creditable in substance and appearance and will form a valuable addition to the practitioner's library.

PRACTICAL ELECTRO-THERAPEUTICS. By WILLIAM F. HUTCHINSON, M.D., Providence, R. I. 217 pages. Philadelphia: Records, McMullin & Co. 1888. Cloth, price $1.50.

This is strictly a practical work on the uses of electricity and the manner of its application. The author in his preface says: "As strictly practical in intent, all theories have been avoided, for both theory and technical terms are uncared for by the busy worker who is only looking for aid from electricity—not a panacea."

The thoughts expressed are the results of fifteen years experience in the special domain of electricity as employed in medicine and surgery.

The different chapters treat of Electro-diagnosis—General faradization—General, direct, and indirect faradization—The technique of galvanism—Disorders of special sense—Dyspepsia—Neurasthenia—Neuralgias—Diseases of children—Diseases of the bladder, prostatic enlargement—Electricity as a sedative—Diseases of the skin—Hysteria and its allies—Illustrated cases of rheumatism, etc.—Paralysis—Electrolysis—Electro-surgery. The author has availed himself of his rich experience to show how, and under what circumstances treatment should be conducted, often entering into the minutest details in explaining the technique.

It is a concise treatise upon this subject, and all interested in electro-therapeutics will not have reason to regret it if they purchase a copy of the work.

ALDEN'S MANIFOLD CYCLOPEDIA. The third volume of Alden's Manifold Cyclopedia of condensed information covers the alphabet between the titles Artemisia and Baptisia. There seems to be little doubt that it will prove to be the great popular Cyclopedia for the next score of years at least. The embodiment of an Unabridged Dictionary of Language and a complete Cyclopedia of Universal Knowledge in one work, in large type, with thousands of illustrations, and all for a price less than people have been used to paying for a Dictionary alone. Its accomplishment will certainly be creditable to Alden's *Literary Revolution.*

As to the quality of the work, both literary and mechanical, any common-sense reader is capable of judging. The venerable Prof. Day, of Yale College, speaks of the work in the following emphatic terms: "The book in all respects more than answers my expectations. It is a very neat volume, of a form convenient for use, firmly bound, of large, clear type, with contents of just that general character which the popular reader requires—comprehensive, accurate, and compact. Its marvelously low cost makes it a prize eagerly to be sought in every intelligence-loving household."

The publisher, John B. Alden, 393 Pearl St., New York, or Clark and Adams Sts., Chicago, will send specimen pages free to any applicant, or a specimen volume (which may be returned if not wanted) in cloth for 50c., or half Morocco, 65c.; postage 10c. extra. The set of thirty volumes is offered at considerably reduced price to early subscribers.

THE STORY OF NEW YORK, by ELBRIDGE S. BROOKS. 311 pages. Finely illustrated. Boston: D. Lothrop Co. 1888. Price, cloth $1.50.

This work is one of the graphic narratives descriptive of the rise and development of the several States of the American union. In the series of *The Story of the States,* each author has been selected for his or her own peculiar and felicitous adaptation to tell just the story assigned. No set lines or limitations are placed upon an author's method of telling the story of any especial State, beyond the general desire that each volume shall, *with historic accuracy,* set forth in strong and picturesque narrative, each State's individual story. In this, the story of New York is not lacking. The author has pictured the trials and vicissitudes of the early settlers in a manner that is thoroughly interesting, yet accurate from an historical stand-point. Mr. Brooks is an impressive and pleasing writer, as the book itself demonstrates. The idea of compiling the history of the United States and setting it forth in the form of stories is novel yet advantageous, and will probably be the means of disseminating this knowledge among classes of people who would not otherwise receive its advantages.

The Story of Louisiana, now in press, by Maurice Thompson, will soon be issued and speedily followed by the Story of Vermont, by John Heaton, both of which will be noticed in these columns as soon as they appear.

PAMPHLETS.

Water, its Impurities Gathered from the Earth and Air, by C. W. Moore, M.D., Editor of *The Pacific Record of Medicine and Surgery.* Reprinted. Compliments of the author.

BOOKS RECEIVED.

A Practical Treatise on Artificial Crown and Bridge-Work, by Geo. Evans. Philadelphia: S. S. White Dental Mfg. Co., Publishers.

Earth in Surgery, by Addinell Hewson, M.D. Philadelphia: Records, McMullin & Co., Publishers.

Compend of Materia Medica and Therapeutics, by Sam'l O. L. Potter, M.A., M.D. Philadelphia: P. Blakiston, Son, & Co., Publishers.

Physiological Action of Medicines, by Drs. Louis Starr, J. B. Walker, and W. M. Powell. Philadelphia: P. Blakiston, Son, & Co., Publishers.

Practice of Medicine, or the Specific Art of Healing, by I. J. M. Goss, A.M., M.D. Chicago: W. T. Keener, Publisher.

Diseases of the Hair and Scalp, by George T. Jackson, M.D. New York: E. B. Treat, Publisher.

[Our readers who desire any of the books reviewed in these columns, or any other works issued by the publishers, can order through us.]

Our Aftermath.

WHICH?—We have a dentist in this town who is also a poet. It is not known whether he mercifully administers gas to the patients, or his Muse.—*Puck.*

HEMORRHAGE FROM EXTRACTION.—A fatal hemorrhage, resulting from the extraction of a right lower molar tooth, lately occurred in New York, at the Presbyterian Hospital.—*Med. Reg.*

NO MINSTRELS FOR HER.—First sweet girl: "Why didn't you accept Mr. Nicefellow's invitation to go to the minstrels? The performance is awfully funny and the audience is kept in a roar." Second sweet girl: "I haven't nice teeth."—*Philadelphia Record.*

A NEW disinfecting compound for purifying the atmosphere of the sick-room has just been presented to the Berlin Medical Society: Oils of Rosemary, Lavender, and Thyme, in the proportions of ten, two, and two and one-half parts respectively, are mixed with nitric acid in the proportion of thirty to one and one-half. The bottle should be shaken before using, and a sponge saturated with the compound left to diffuse by evaporation. Simple as it is, the vapor of this compound is said to possess extraordinary properties in controlling the odors and effluvia of offensive and infectious disorders.

A DOCTOR AWAKENED BY HIS NIGHT-BELL.—A Berlin physician, so states the *Central Zeitung*, was awakened one night by the violent ringing of his bell, and on opening the door found his landlord's servant who had been belated and took this means of gaining an entrance. As neither the servant nor her master seemed to regard the matter as anything out of the way, the irate doctor caused her arrest on the charge of trespass, and the court imposed a fine of seventy-five cents and costs. Several physicians of this city, living in flats, who have had a similar experience, may be pleased to learn of this legal decision.

THE "CIGARETTE EYE."—A New York oculist says that the greatest enemy to the eyes of young men is the cigarette. Recently a disease has appeared among smokers which is dangerous, and after careful investigation, the best authorities, who for a long time were at a loss to understand the peculiar malady, have traced it to the small, paper-covered tobacco sticks. It is now known as the "cigarette eye," and can be cured only by long treatment. Its symptoms are dimness and film-like gathering over the eye, which appears and disappears at intervals.—*Chicago News.*

We have known even dentists to smoke the abominable stuff.

THINKING AND WORKING.—In our present system of education—now happily passing away for a better one—we want one man to be always thinking and another to be always working; and we call the one a gentleman and the other an operative; whereas the workman ought often to be thinking and the thinker often to be working, and both should be gentlemen in the best sense. As it is we make both ungentle, the one envying, the other despising the other; and the mass of society is made up of morbid unhealthy thinkers and miserable workers. It is only by labor that thought can be made happy; and the professions should be liberal, and there should be less pride felt in peculiarity of employment, and more in the excellence of achievement.—*The Popular Science News.*

THE NEED OF ARM-EXERCISE.—Walking on an even surface, the only variety of physical exercise which most business and professional men get in town, is well known to be a poor substitute for arm-exertion. The reason is partially plain, since walking is almost automatic and involuntary. The walking mechanism is set in motion as we would turn an hour-glass, and requires little attention, much less volition and separate discharges of force from the brain-surface with each muscular contraction, as is the case with the great majority of *arm*-movements.

The arm-user is a higher animal than the leg-user. Arm-motions are more nearly associated with mental action than leg-movements. A man's lower limbs merely carry his higher centres to his food or work. The latter must be executed with his arms and hands.

A third way in which arm-exercise benefits the organism is through the nervous system. Whether this is due to an increased supply of richer, purer blood, or whether the continual discharge of motor impulses in some way stores up another variety of force, we do not know. One thing is certain, the victim of neurasthenia is very seldom an individual who daily uses his arms for muscular work; with this, the limit of hurtful mental work is seldom reached.—From Injurious Influences of City Life, by Walter B. Platt, M.D., in the *Popular Science Monthly.*

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"A word fitly spoken is like apples of gold."—SOLOMON.

THE OTTOLENGUI METHOD OF ANÆSTHETIZING SENSITIVE DENTINE.*

BY LEVITT E. CUSTER, B.S., D.D.S., DAYTON, O.

IN a recent number of the *Archives of Dentistry* there appeared the names of several of our leading brethren and their favorite methods and medicaments for obtunding sensitive dentine. The agents used by them would complete a list commencing with mechanical means, followed by dehydrants, coagulators, sedatives, local anæsthetics and closing up with a long roll of patent medicines. Alcohol headed the list of dehydrants, while carbolic acid was the proud exponent of coagulation; at one extreme would be found hot air and at the other rhigolene; on one hand would be found sharp burs and a Bonwill engine, and on the other "Oliver's Pain Obtunder" and Christian Science, equal parts. Every operator's method was the best, and he was always successful; but recently the attention of the profession has been called to a new method of obtunding sensitive dentine.

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* Read before the Ohio State Dental Society, Cincinnati, October 16, 1888.

Dr. B. A. R. Ottolengui, a young practitioner, baffled in his attempts to satisfactorily obtund sensitive dentine by ordinary methods, has according to his own statements followed a course of logical reasoning to a triumphant end. Out of over one hundred operations he records no failure, and Atkinson says it is our own fault if we have not tried a method of such statistics.

The author of the method uses the term anæsthetize in preference to the old term obtund, on account of the complete freedom from pain brought about; and since he claims absolute success in every case, let us examine the theory and the action of the different agents employed.

The object is first to withdraw the water from the dentinal canaliculi, leaving a beaded fibril which will not completely fill the tubule, then anæsthetize the fibril. For the former purpose he uses hot air, and for the latter, sulphuric ether. He proceeds in the following manner which I give in his own words: "Isolate the tooth and one or two others on each side of it, with rubber dam. After using bibulous paper, apply dry heat, not too hot, with the chip blower. These blasts should be continued until the whole tooth becomes whitened, which is sufficient evidence of dehydration. Having done this the next step is to anæsthetize the fibre. To do this use the purest ether thrown on with a continuous spray apparatus." This is continued until the patient is quiescent.

In this method we see a combination of two heretofore well known principles—complete desiccation followed by reduction of temperature.

The histological structure of dentine being a tube enclosing a beaded thread of nerve tissue, if we may call it nerve tissue, and the interbeaded spaces filled with a fluid which we suppose to be water, we see the latter to be essential to perfect sensitiveness of dentine in a two-fold manner; but which surrounds and fills the interbeaded spaces of the dentinal fibril, and that which is a constituent of the fibril itself. The water surrounding the fibril is essential in preserving an equilibrium of pressure, and acts in the same manner in the endolymph of the labyrinth of the ear. One theory of the sensitiveness of dentine is that its tubuli contain only a fluid which alone transmits pressure and sensation to the pulp; but a better theory is that it containing this beaded fibril the fluid is not a continuous column and in that manner being enclosed in unyielding walls presses upon the fibril itself—not the pulp. So if this be true you will readily comprehend the external relation of the water to the fibril, which if withdrawn will reduce the sensitiveness.

In regard to the relation of water as a constituent of nerve tissue or the dentinal fibril; as one of the conditions for the perfect performance of nerve function there must be moisture, hence the effect of dehydration and hence its application and reputation as an obtundent for sensitive dentine. By the extraction of water from the tubuli and a portion from the fibril itself by chloride of zinc, alcohol, hot air, or by whatever means employed, the above condition is stricken out, and sensation cannot be conveyed. The reader never had success in drawing out the water until experimenting according to the first step of the Ottolengui method, when he found that he had so thoroughly desiccated the dentine and its delicate contents, and it was so nearly devoid of sensibility that the operation was often painlessly completed without applying the ether spray. Complete desiccation by whatever means, to my mind is the most powerful factor in obtunding sensitive dentine and when used in conjunction with ether spray, is the more effective of the two. I have had very little success at any time with those agents which coagulate albumen.

The second step of the process is simply anæsthesia of the dentinal fibril which is produced by the reducing the temperature by means of the ether spray. Here is a new application of an old method of local anæsthesia—the use of the ether spray for sensitive dentine. As not many years ago when the extraction of teeth was of more common occurrence, ether was sprayed upon the soft tissues surrounding the offending member and the operation painlessly performed, so to-day this same agent has been revived and is employed in lessening the pain incident to preparing cavities, filling and saving teeth. As a condition also for the perfect performance of nerve function, every animal organization seems to demand a certain temperature, therefore if that temperature be lowered, there will be a reduction of sensibility in a proportion not unlike the number of degrees. The first sensation is felt and is painful according to the degrees from the normal temperature, if the agent be continued, the nerve tissue itself becomes reduced in temperature and its conveying power is lessened in proportion to its departure from normality. Hence the application of the ether spray as a local anæsthetic. Upon cutaneous tissue the numbing power is aided by withdrawal of blood and nutrition from the parts, but when applied to the dentinal fibril it is dependent entirely upon the refrigerant quality.

The first and unfailing query arises as to the effect of such extremes upon the pulp. In drying out the dentine it is not understood that the tooth is to be heated at all. Dr. Ottolengui says the blasts may be so regulated that the whole tooth will not become hot and at the same time the moisture will have been vaporized. My own experience is that, as dentine is a poor conductor, by lengthening the intervals and applying sharp, quick, hot blasts, thorough desiccation might be accomplished without the heat reaching the pulp. Therefore it is not necessary that there be pulp injury from the desiccating process.

The only part admitting of doubt is the reduction of temperature. Now it is not intended that this process be continued until icicles hang from the tooth, but simply to that point where there is a cessation of pain, which fortunately is many degrees from the freezing point. The pulp is not frozen at all; it, and its nerve endings have simply been reduced in temperature until, according to a former argument they cannot receive or transmit pain to the censorium. Dr. Ottolengui thinks the fibrilæ alone are anæsthetized, but I am of the opinion, from the very limited duration of anæsthesia, that the pulp also largely shares the numbing influence. I find as soon as warmth returns by ingress of warm blood and by conduction, sensation is also restored, proving that actual freezing had not taken place, and hence no injury of pulp tissue. Doubtless if this operation were often repeated a chronic lesion of the pulp would set in which would lead to its destruction; but for a single or a second operation I can see no objection. The author says he has seen no outward ill results so far. At this juncture Dr. R. L. Cochran, who has secretly used the ether spray for sensitive dentine for a long time, says: "In twenty-three years I never saw a dead pulp or any *ill effects*, except sometimes sore mouths, from the ether spray." The latter we would understand to have been due to the ether coming in contact with the mucous membrane, which may be attributed to carelessness rather than necessity. In my own limited experience I have seen no bad effects so far.

The application of cold as an anæsthetic to an organ containing as it does nerve endings, whose mission is to cry out against such extremes may be regarded as heroic treatment; but heroism is what cuts through and burs out Atkinson's diseased apices of roots; heroism is what surgically treats live pulps; yes, heroism is what implants teeth. Often in our practice it is necessary to become quite severe that thoroughness and success may result. Ottolengui found the application of the ether spray to be painful in about forty per cent. of cases, but in my hands it has been more or less painful in all, but of such a character that the patient would always prefer it to withstanding the pain of cutting without its use. The pain is most severe at the beginning but it gradually lessens until at the end of from one to one and one-half minutes it has entirely subsided.

As to the effectiveness of this method of obtunding sensitive dentine, I would say that while it is not the ideal method, after having tried nearly every one known, in my hands it is the only one that will produce complete anæsthesia of dentine. This last stage of completeness may possibly be due to slight general anæsthesia by inhalation of the vapor; at any rate it is effective; but whether or not by blundering manipulation, I have not been able to carry the anæsthetic stage long enough for completing a lengthy operation.

The Ottolengui method of anæsthetizing sensitive dentine by virtue of at least the one moment of complete anæsthesia which it produces, is valuable, and for that one long desired virtue is to be recognized as one of the best methods for obtunding sensitive dentine and allaying the terror so commonly associated with the term dentist.

DISCUSSION.

Dr. Berry: Common air is a very good anæsthetic. For the knowledge of this we are indebted to the important discovery of Dr. Bonwill. If the patient can be induced to breathe rapidly for one minute he will be so anæsthetized that a sensitive cavity in a tooth may be excavated, while the rapid breathing is kept up, without pain. The operation will be felt but usually without pain.

Dr. H. A. Smith: This subject of treatment of sensitive dentine is an interesting one. There are one or two points I would like to notice. If the process is that of refrigeration, as referred to by Dr. Arnold, we will do well to remember the tooth cannot be subjected to great change of temperature without disturbance in the pulp. If the pulp had been subject to irritation in any degree, before we began to operate, then repeated shocks given in the manner described would most likely convey it past the point, when it would recover its physiological state. I can hardly believe that any benefits from the use of chloroform or ether in this manner are due to their properties as anæsthetics. If heat is used no matter how, we affect a change in the organic tissues of dentine. It is changed physically, and fails to respond to injury. In these discussions we are sometimes led to believe we are treating only hyper-sensitive dentine. If this was true, the rational treatment would be to exclude irritants and give the tissues rest. Unfortunately healthy dentine is frequently exquisitely sensitive. The obtunding agents to meet all these conditions have yet to be discovered.

Dr. Taft: I think the treatment as indicated by Dr. Custer will be liable to do injury in the direction indicated. It is too energetic and there might be liability of producing periosteal irritation. There would be very considerable liability of injuring the pulp of the tooth to an extent that it would not recover upon the return of the normal temperature. Now, some very broad claims are made for the use of heat alone, it is a reasonable method of treatment; a treatment that in most instances perhaps will be effectual, in all instances, if pursued to a sufficient extent. Frequent application of heated air during excavating will usually make the operation quite bearable by almost every patient. The use of an ether spray alone is of very little value in ordinary cases.

After the excavation has been completed and thorough desiccation, then a solution of cocaine or heated carbolic acid may be used with decidedly good effect. After excavation and desiccation a solution or varnish of gum mastic or copal may be applied to the walls of the cavity for the purpose of preventing a recurrence of the sensitiveness after the filling has been completed. By this means, in most cases, entire freedom from a return of the sensitiveness is secured.

Dr. Arnold: I do not wish to be understood as having used this remedy and I have never advocated it. It has been very unsatisfactory with dentists generally, sometimes I use chloroform and ether. Quite often very nervous patients, hysterical ones especially, have to be treated very carefully and cautiously. There is a question in my mind, whether by extreme temperature we do not impair the tissue to that extent that there would be trouble to the pulp afterwards.

Dr. Bell: Sensitiveness of dentine is a subject that is of the utmost importance to us. Many of us have used with great success alcohol upon dentine. This article is of great assistance to us in our practice, but I make application of this in a different way from the ordinary manner in which it is used. I apply with cotton and then use the hot spray. Make an application of peppermint, and if it is an extreme case apply a hot blast two or three times as the case may require until all of the moisture has been removed. I use the bur, drill, or excavator; in this way I can excavate much more rapidly and much more effectually. The bur, or drill, or excavator frequently becomes hot and produces the pain in that way. I agree that it is always policy to use some non-conductor in the method of filling teeth.

Dr. Wright: The question at issue is a very difficult one, about which to get reliable data. What would be a success in the hands of Dr. Custer may not be in my hands. We have been talking about dentine and anæsthetic agents ever since I can remember, and that is a very long time ago, and it seems to me with all our desire and determination we will be able to get something that will reduce pain. We have not gotten any nearer to it than we were twenty-five years ago. The pain is, of course, in a nerve center, and when we have difficult and serious operations to perform, it seems to me, that we may do as the surgeon does and rely upon such anæsthetics as chloroform, ether, etc. We cannot get reliable data. Only a few years ago we were all interested in the question of using hot glycerine and carbolic acid, which had such a bad smell and disturbed the patient and gave an offensive odor to the operating room, but for the present we have not a reliable local anæsthetic that will do away with this pain.

Dr. Wilson: I rise simply to call attention to this matter in the way of caution, and as you all seem to agree that we have nothing that is perfect, the caution is, that in many respects we are producing more pain than we are relieving, in the use of hot air or warm air, if it is not applied carefully. We have never been able to wholly control this affection, and I think that we all agree that hot air when applied carefully gives some relief, but we must use it cautiously.

Dr. Smith: We must remember that we work and cut upon a tissue unlike any other in the human body. It is the question of the character and nature of the affection which has not been settled. It has been the general opinion that the injury is first upon the dentinal fibre itself. It may, however, be directly upon the pulp. If this be true, we may not expect much benefit from our treatment with obtundents.

It is very difficult for a patient to realize when you touch the dentine, that the hurt is not right at the surface, but it don't necessarily follow that it is. And I think Dr. Wright is right in what he proposes, that we must give an anæsthetic, that we must put the nervous system to sleep before we can treat the patient.

Dr. Wright: Dr. Smith refers to the tissue being different from any other, and this is why we cannot apply local anæsthetics. We can apply the fumes of chloroform to a wound and in that way reduce, to a certain extent, the sensibility. I appreciate that the dentine and the enamel of teeth are different tissues, and still I hold that we have not got any nearer to it than we were twenty-five years ago.

Dr. Taft: I can hardly agree with Dr. Wright, when he says that we have been working twenty-five years, and have not made any advancement on this subject; in other words, we are not any nearer the desired result that at that time. I can hardly understand why such statements should be made; my own experience will not allow unchallenged a statement of that kind; and coming as it does from a professional brother, I can hardly let it pass without some modification. I know, as I think every operator does here, that he manages his cases better than he did twenty-five years ago—better than he did ten or fifteen years ago; we are making progress in this particular as well as in other things.

I have heard the same statement made in regard to other branches of our practice: "We are no better now than we were half a century ago." Now, everybody knows that this is not true. Men making such statements may sometimes persuade themselves that they are true.

In this particular matter you do not need air as hot as it can be made; the temperature can be regulated acccording to the case. It is simply a current of warm air to facilitate the removal of the moisture from the cavity; and it is a mistake whenever pain is produced by the introduction of a current of air into the cavity. The air should be so regulated in temperature, and in the rapidity of the current, that little or no pain is experienced by the patient; and it is an unskillful operator who does otherwise.

Prof. Guilford, of Philadelphia, has been giving special attention to the use of warm air for this purpose, and to apparatus best adapted. A full description of Dr. Guilford's device is given in the Transactions of the Ninth International Medical Congress, vol. 5, page 472.

The temperature can be regulated by adjusting the point of the air-pipe at a proper distance from the tooth, or by having the air in the instrument of the right temperature. With the proper appliances, the temperature can be perfectly controlled. In the use of the ether spray the temperature is reduced and in this way the sensitiveness is lessened.

Dr. Robinson: Dr. Taft was speaking about the practice of drying a cavity, and I will speak of a very inexpensive apparatus that works well. I have a little globe cylinder, and on each side there is a little point running out, to which I attach a little rubber tube; on one end is attached a rubber ball, and on the other is a little mouth-piece—something like that with a very fine blowpipe jet. I let it get very hot and use the bulb with one hand and place the little tube over the cavity with the other; and I can get any desired heat I wish. I like it better than any other apparatus that I have ever used for that purpose. As to sensitive dentine that Dr. Wright was speaking about, I remember when we were students at the Ohio College, there was a great deal said upon the subject of sensitive dentine, and it was one of our particular topics in the class; and we did not know how to get rid of it. And always since then I have more or less taken a great deal of pains to find a plan of operating to save my patients as much pain as possible; and I have found nothing to-day of any consequence except to warm the cavity as much as I think it ought to be without producing pain, and then to excavate a little while, and drying it again, and to keep on in that manner until I get through with the operation as well as I can and possibly better than with any other method I have ever used.

There is a condition in which were we to use a dry cavity, there is more sensitiveness than when there is moisture; and it requires a great deal of judgment in these cases to know when to dry a cavity and when to let it remain moist. There are many cases in which we go to work without applying the dam at all. Preparatory to putting on the dam, we operate and have the cavity pretty well prepared. We put on the dam, for instance, and find out that it is almost impossible to excavate the cavity at all on account of its extreme sensitiveness. With moisture you can get right along and excavate the cavity without any pain to the patient at all, until it gets dry again; and then the reverse may occur. Where you treat the cavity with no moisture at all in it, you can hardly excavate it to the slightest degree. The only question for us is to decide how best to excavate a cavity and with as little pain as possible.

PERICEMENTITIS.*

BY F. S. MAXWELL, D.D.S., STEUBENVILLE, O.

Pericementitis is inflammation of the membrane associating the root of a tooth with its alveolus. The peridental membrane is a thick, fibrous membrane investing the roots of the teeth,—continuous with the periosteum of bone,—thicker than the periosteum of any part of the body, and increases in thickness with age. The peridental membrane is a reflection of the membrane that covers the alveolus, at the same time dipping down to line the pulp cavity, and is continuous with the mucous membrane covering the gum.

The peridental membrane,—the remains of the cemental pulp,—is called the "mother of the cementum," and the cementum being developed from the periosteum it therefore in after life receives its nourishment from it.

The peridental membrane consists of but one layer, in contradistinction to the periosteum which consists of two, the outer one formed of connective tissue, the inner of fine elastic fibres, which is continuous with the peridental membrane, the outer layer disappearing and re-uniting with the inner after leaving the oral cavity. The fibres of the membrane are arranged to act as a cushion against a strain brought against the tooth, the arrangement being alike over the body of the root, but different at the apex, leaving a space between the apex and alveolus, called by Dr. Black the apical space.

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* Read before the Ohio State Dental Society, Cincinnati, October 16, 1888.

These fibres again come together at the rim of the alveolus, forming a thick mass called the dental ligament, and are then continuous with the periosteum. The peridental membrane receives its blood supply from a branch of the artery supplying the pulp, and which passes into the apical space before dividing, as one source, and from another by the anastomosing of these vessels with similar ones supplying the gums. Thus you see the membrane has an arterial supply from two sources, and any injury affecting the supply from one will cause no stoppage with the other, and consequently the periosteum does not suffer. The nerve supply is the same.

The cementum of the root is supplied with nutrient material from the peridental membrane, hence if *some* of this blood and nerve supply is cut off the cementum does not suffer for want of nourishment. One of the most important offices of the peridental membrane is its sense of touch.

The enamel of the tooth has no such sense and the pulp only conveys painful impressions, hence every touch upon the tooth *must* be reported by its peridental membrane. Its value is therefore apparent, but like every other part of the human body it is subject to disease. Pericementitis *proper* has its seat in the apical space, following the death of the pulp, immediately preceding alveolar abscess, and is the beginning of the most painful affection to which the teeth are liable. It *seldom* occurs during the life of the pulp, being augmented by the escape of poisonous gases through the apical foramen and into the surrounding tissues. Pericementitis may exist under two forms, acute, or apical pericementitis becoming chronic in character, and those cases having their origin at the gingival border, *some* of which are *constitutional* and chronic in form, the acute, or apical form, always occuring from a diseased pulp. By far the greater number of cases come under the acute form, and the most frequent of these is *apical* or *true pericementitis.* This always begins in the apical space and near the apical foramen. This inflamed tissue which is richly supplied with nerves, becomes exquisitely painful and is prone to terminate in alveolar abscess. There is no particular time for inflammation to begin, sometimes it immediately follows the death of the pulp, often is indefinitely delayed, and then again may never occur. "It is safe to state, though, that no tooth with an empty pulp-chamber is safe from apical pericementitis."

The symptoms of the disease vary considerably, but it usually manifests itself by a dull, and sometimes throbbing, pain about the affected tooth. This is at first relieved by pressure upon the tooth, but as inflammation increases, pressure produces extreme pain, and inflammation elevates the tooth in its socket. The gum becomes red, changing to a purplish hue, the pain becomes continuous and more violent, and an abscess may be established in from one to five days.

It is not very difficult to diagnose a case of acute apical pericementitis. Pain caused by pressure upon the tooth is a symptom distinguishing it from hyperæmia. In diseases of the pulp the affected organ does not become tender to the touch until the inflammation has passed through the foramen, and the patient is uncertain as to exact location. In apical pericementitis the pain is definitely located and the tooth is *not* subject to thermal changes, the reverse in diseased pulp. Having, then, diagnosed our case the first thing to do, to obtain relief, is to gain free access to the root canals, and cleanse with suitable instruments. Then saturate the cavity, after having first applied the rubber-dam, with some good non-irritating disinfectant,—*not creosote*,—carbolic acid and iodoform will do. After thoroughly disinfecting, the pulp chamber should be loosely filled with cotton containing some antiseptic dressing, and the cavity sealed temporarily. Usually the pain subsides within three or four hours, but occasionally will continue, in event of which, counter irritation is necessary, which can be best made by means of chloroform applied directly over the end of the root, or better still, by capsicum plasters; I use Dr. Frank Darby's. In all cases a brisk saline cathartic is beneficial. Heroic treatment, consisting of making an external opening over the apical space, is sometimes resorted to, but this is seldom necessary. Chronic apical pericementitis has all the characteristics of the acute in a modified form, excepting that the pain is intermittent. This form of disease is likely to be confounded with phagedenic pericementitis, but an examination of the peridental membrane will render a diagnosis clear.

Diseases of the peridental membrane having their beginning at the gingival, or gum, margin have been very fully described in past years. I was always taught to group them for description. Dr. Riggs, of Hartford, Conn., a few years since, called attention to the importance of knowledge in this particular branch, but nothing has been made clear until Dr. Black took hold of it. He styles these classes of disease of the peridonteum as gingival, calcic, and phagedenic pericementitis. The gingival are for the most part subject to the patients general health and are therefore constitutional in character, being caused by poisonous substances circulating in the blood and having an affinity for the gingival organ. We have mercurial gingivitis and gingivitis caused by typhoid fever, scurvy, and other skin diseases. Simple gingivitis is but the starting point of grave diseases, the swollen condition of the gums being a receptacle for calculus. Calcic pericementitis is caused by deposits of calculus on the necks of the teeth. It is certainly a serious trouble and causes, perhaps, the loss of as many teeth as caries.

There are two varieties of deposit depending upon the location. One, the serumal, derived from the serum, and is always deposited *under* the gum; the other, the salivary, from the saliva, and is found on the necks of the teeth but *not beneath* the gum. The serumal deposit has a tendency to go to the end of the root, is in the form of a hard, brownish crust, or little nodules, and is not limited to the neighborhood of the salivary glands as is the salivary calculus. When a slight deposit has taken place it becomes an irritant, and, though it may remain in position a considerable length of time before trouble ensues, it eventually destroys the peridental membrane. The most aggravating part of the disease, is, that it may go to the end of the root before its presence becomes known, the gum not receding with the alveolar wall and peridental membrane. The inflammation continues, pus flows from the sockets, the peridental membrane thickens about the end of the root, and although the tooth may be quite loose in its socket, it is still held firmly at the apex. This condition distinguishes it from phagedenic pericementitis in which the membrane is destroyed at the *end*, but clings to the *sides* of the root. The teeth in this condition are, in reality, lost. The deposit of salivary calculus manifests itself in much the same manner as those just described, excepting that it is more pronounced in the neighborhood of the ducts of the salivary glands. As the deposit increases the tendency is to encircle the tooth, and, going from one tooth to another, may spread over the entire arch. I have often seen cases where there were deposits of both the serumal and salivary variety, the serumal occupying the necks of the teeth *remote* from the salivary ducts. Salivary calculus is generally of a light yellow color, oftentimes dark, is much softer, deposited in larger quantities, and more irritating to the soft tissues than the serumal. Its effect upon the peridental membrane, however, is not so fatal as the serumal, unless completely encircling the tooth, when the tendency is to accumulate more rapidly, and the continuance of accumulation brings evil results. The peridental membrane, happily, when free from irritation, heals rapidly, and it is to this recuperation that makes the operations of replantation, transplantation, and implantation successful (?), providing the disease has not previously destroyed the peridental membrane. The treatment for calcic inflammation of the peridental membrane is a removal of the cause, and *thoroughness* in so doing, an operation sometimes very difficult to accomplish. The leaving of the smallest portion of deposit is but a flame to the fuel, and is as fatal as a portion of decay on the *margin* of a filling.

Suitable instruments are necessary, and in manipulating them the greatest care should be taken not to injure the gum, unless there should be a hypertrophy of that tissue. A speedy recovery should follow the removal of the calculus, unless the case is of long standing where there has been absorption of the alveolus and a thickening of the peridental membrane. In such cases I have always used a 30 per cent. solution of chloride of zinc *under* the free margin of the gums. Unless micro-organisms are present, escharotics should not be used in *after* treatment, but it is always well for a day or two to use carbolic acid in a strong solution. If the gum returns to its normal condition, and the teeth are tight in their sockets, you can feel safe in predicting a cure, but not unless you have these conditions. Phagedenic pericementitis is a disease *of* the peridental membrane. The inflammation is of that peculiar character whereby the death of the membrane precedes that of the alveolus. The first sign of the disease is at the gingival margin when the gums become red, but without inflammation, which redness somewhat disappears as the disease advances toward the peridental membrane. The fibres of the latter seem to break down, or meet, under the exciting trouble, and a thin bladed instrument can readily be passed along the root farther than it should.

Pus forms in *pockets* about the root and the tendency is to progress toward the apex and eventually destroy the entire root membrane. Neighboring teeth are generally attacked. Unlike serumal pericementitis, the *end* of the *root* may be entirely stripped, when the disease is not accompanied by calculus deposits, and the tooth still held in its socket by its membrane on the *sides* of the root where it may be but little affected. The alveolar wall is *afterwards* absorbed, (Black,) that is, in proportion to the advancement of the diseased membrane. The roots may be absorbed (Magitot) in connection with the disease, but the cases seem rare. Calculus deposits complicate the trouble, and a majority of cases have such deposits, but its absence does not make the case any the less destructive. In serumal calculus, with nodules under the gum, unless very careful as to cleanliness, salivary calculus will form also. "When this occurs in considerable quantity the appearance of disease becomes much more apparent because of the greater inflammation of the gum tissue caused by the calculus." Here we have, in fact, two diseases existing together: calsic inflammation from deposits of calculus, and phagedenic inflammation further up toward the apex. It is evidently this dual form, so often presented by these affections, that has so long delayed the recognition of the phagedenic variety as an independent disease. Great difference exists in regard to healing after removing the calculus, although the performance of some may be perfect.

Our results will be more satisfactory if our diagnosis is accurate. In phagedenic pericementitis *pockets, as a rule*, are found along the roots. The peridental membrane is destroyed much further than the calculus has extended on the root, "and in the final loosening of the tooth it will be found to have been held by a portion of membrane on the sides, the membrane at the apex having been destroyed." These differences afford pretty reliable ground for diagnosis. Sometimes, though, we find cases where pus is burrowing from under the gum and we are led to believe we have a case of alveolar abscess. In event of this we can look for other neighboring points of attack in order to diagnose our disease. According to Dr. Black, the etiology of phagedenic pericementitis seems to be from the fungus of some micro-organism, from the fact that medicines that destroy micro-organisms produce favorable results here. It is observed that the disease will not flourish except in locations in which a fungus growth would have some form of protection against the free flow of the buccal fluids, such as the pockets, formed at the gum margin, will give, hence the cure of the disease by the removal of all free margins of the gums. This disease is purely *local*, and not dependent upon any poison circulating in the blood, or of any systemic disorders, and is not hereditary, as the deposit of calculus may be, nor do the deposits of calculus favor its development. Some writers regard it as constitutional, but if it is, it is confined to scrofulous, gouty, or rheumatic persons, with anæmia as the predisposing cause. The treatment of phagedenic pericementitis calls for certain operations in common with the treatment of calcic inflammations, the first thing in every case being the removal of all deposits from the neck and roots of the tooth, such deposits being generally situated far up under the gum. This calculus, of the serumal variety, must be *thoroughly* removed, and what operation of the oral cavity, to be successful, should not be thorough, as the smallest particle remaining acts as an irritant. Phagedenic, unlike calcic, inflammation does not end with the removal of the calculus. Where there is a rapid destruction of the tissues, including the peridental membrane and the alveolus, it is better to cut away with a sharp excavator sufficient to obtain solid, or healthy, surface, or until the bone is felt to be firm and resistant. In this case, as in all others, great care should be taken not to injure the gingival margin, the injury sustained further toward the apex is of no importance, comparatively, but if this gum margin is injured sufficiently to cause a slough our efforts to heal the peridental membrane will be defeated. After the operation, the gum should lie closer to the neck of the tooth, than before beginning, acting as a barrier to the saliva and exclusion of micro-organisms. If there are no thickened or roughened margins to interfere with the contact of the parts, medication may begin at once. The pocket should be thoroughly washed with peroxide of hydrogen, as an antiseptic, after first removing the débris, and a little bichloride of mercury may be added if so desired. These can best be injected by a Dunn syringe, and the treatment continued with chloride of zinc, as an astringent, for a time or two. Follow this with an application of oil of cinnamon two parts, to one of carbolic acid, as a stimulant, to be repeated once every three or four days. Dr. Harlan recommends a solution of iodoform and eucalyptus, or iodoform and cinnamon, either of which is a good stimulant and antiseptic, and should be packed into the pockets, not injected. In the after treatment care should be taken not to injure the granulations, the parts do not heal by first intention, and the mouth rinsed frequently with a slightly diluted listerine wash. If our treatment has been successful an attachment will take place between the cementum and peridental membrane, even to a dead tooth, for this fact was demonstrated by Hunter in a case of replanting in 1778. "In the treatment of phagedenic pericementitis the complete reformation of the peridental membrane should be expected if the gingival margin be left intact." Just so far as the margin of the gum may have receded from its normal position, just so far will we fail in reformation of the peridental membrane; that is, if a portion of the root is left uncovered, there cannot be a reproduction of the membrane at that point, however, the peridental membrane may be there with no reproduction of the alveolar wall. Some operators resort to the sponge-graft for the rebuilding of the peridental membrane, but I regard it as a dangerous practice, at least, until I hear of more success in its use.*

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* Discussion of Dr. Maxwell's paper will appear in the December JOURNAL.

ILLUSIONS.*

BY DR. J. D. M'CULLOCH, NEW ORLEANS.

THE number of cold truths that could be compiled by a prolific writer and investigator regarding this subject in relation to our profession, is astonishing from the fact that "those who know" tell us that dentistry has made a greater advancement in the last quarter of a century than any other science.

It would seem that many of our profession are affected by illusions, and it also seems that as we advance the number of illusionists increases.

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* Read at the Louisiana State Dental Society.

I did not expect to present a paper to this society at this meeting, but a number of incidents happening during the last week, have fixed themselves so tenaciously to my mind, as to result in the subject of the paper I now offer. I make no apology for its contents knowing them to be truths, but wish to beg indulgence for the manner in which they are presented.

I have had the pleasure of seeing some fine fillings made by one of the best dentists of this country inserted nearly thirty-five years ago, and of soft gold. True, the file had been used to some extent, but, withal, the fillings were in as perfect condition as one could wish; this fact proves that the now prevalent idea, that cohesive gold is the only form of gold that can be used successfully to save the teeth, is an illusion. All cavities in which the four walls are standing so as to retain the general contour of the tooth, can be filled with soft gold in the form of cylinders just as well as with cohesive gold. You can accomplish the same result in less time and with much less pain; you can get a perfect adaptation of material to tooth substance, solidity is gained, and by using cylinders of a proper length to allow them to extend well beyond the orifice of the cavity, the contour of the tooth can be perfectly restored by proper malleting, for in this class of cavities very little contouring is needed. It is an illusion to spend two or three hours to make a filling that can be made in one-third the time, it is also an illusion to think a good filling cannot be made quickly. Cylinders of soft gold should be used for starting all large fillings making a better foundation in most cases than cohesive gold alone, especially in approximate cavities in bicuspids and molars. A better adaptation to the cervical wall is obtained, and this is the most important portion in the class of fillings just mentioned. Much time can be saved without lessening the value of the result attained, which is valuable alike to both operator and patient.

How very many teeth have been lost from severe pericemental trouble, the result of long continued malleting? The operator has labored skillfully to place the tooth in a healthy condition preparatory to filling, and when this has been accomplished, he will take his mallet and hammer the gold into the tooth until the subsequent pain and agony announce to both him and his patient that the very object of treatment has been defeated. This is inflammation of the peridental membrane, and naturally the thoughts wander to the study of physiology and pathology of the teeth and their attachment to the jaw. If these operators who so fondly mallet a tooth to destruction would pay close attention to teachings of microscopy in regard to the peridental membrane, the mallet would be in many instances laid aside, or at least be used sparingly in a number of cases. But a well known dentist told me I would be surprised to see the number of good men, who leave the rooms of the American Dental Association, when a celebrated dentist gets up to read a paper on microscopy. These men are laboring under an illusion. All the success, the brilliant achievements, and the advancements of dentistry that dentists are proud of, are due and can be traced to the researches of the microscopists, in the medical and dental professions. It is an illusion to think one can get along without such knowledge, for by the knowledge gained from the microscopic investigations in pathology and physiology, the dentist is enabled to place a tooth of a patient suffering untold agony in a perfectly healthy condition to receive a filling. From treatment the tooth is practically encysted the same as a bullet sometimes is, when lodged in the body. Now after having gained this end, will any one say it is a scientific practice to use a mallet on such a tooth for any length of time? I should say it is not! It is an illusion to so think.

Another illustration of dental illusions is the idea that a good filling cannot be made of amalgam. The method of mixing in the palm of the hand, and when but half mixed, to plaster the mass into a cavity badly prepared, with instrument poorly adapted, and to expect such a filling, without ever receiving a finish, to save a tooth is indeed a strange illusion. Does this look like advancement? Is it scientific? Yet this is, with many, an every day practice, and some dentists wonder why amalgam will not save the teeth. It is such fillings that cause the tooth to crumble and break away; but to suspect the operator would be an illusion.

If the proper proportion of fillings and mercury be placed within a wedgewood morter and rubbed briskly until an even smooth mass is obtained, and then a properly fitted matrix of steel be adjusted to the tooth in which the cavity has been thoroughly prepared, with the inside much larger than the orifice, the edges nicely trimmed and polished, then the mass placed within piece by piece, keeping the parts perfectly dry and pressing each piece closely until the cavity is more than full, placing upon this a tightly rolled ball of cotton and with a large ball burnisher press the whole mass tightly home. You will find you have a close even-grained and perfect filling. All that now remains is to articulate it and dismiss the patient for two or three days. Then finish with emery strips, pumice and chalk. It will not be an illusion to think that you have a filling that will stand the test of time as though the tooth were filled with any other material.

If a tooth need an amalgam filling it must be badly decayed as this material is resorted to in such cases; therefore the pulp is in very many cases implicated in the trouble or has already been dead some time. This brings us to the treatment and filling of root canals. I will not mention pulp capping as the record of the past proves that this operation is a failure. Any who now follow this practice, except in very extraordinary cases, are indeed suffering from something more serious than an illusion.

Since the germ theory of disease has taken hold of some very few of our professional brethren, they seem to want to make themselves heard, as McGregor says, they are so eager to make a noise that if they had their choice they would rather beat a drum than touch a lyre. The practice of swapping cotton loaded with all the antiseptics and disinfectants known to medicine, from day to day, extending sometimes into weeks and occasionally for a period of months, makes one believe that the dentist is laboring under the hallucination that the germ of disease has its origin and abode in the putrid root of a tooth.

These men tell us that all troubles arising from exposed, dying and dead pulps are due to germs, and authorities on the same subject say that germs to live and multiply must have an abode favorable to their existence. If such be the case somebody must be wrong, and as a matter of course, it cannot be the dentist, it must certainly be the authorities. Be it as it may, if these things can live in the putrid remains of a pulp and here find food for their existence, they must feel like a fish out of water when transferred to the clean healthy living tissue beyond the root. My own opinion is that too many pieces of cotton are pushed up into the root, where they act like the piston of a syringe and force the contents through the apical foramen, this matter acts as a mechanical irritant, the same as would a broach or any such substance.

That a root can be filled and filled well at a single sitting regardless of its condition, whether the pulp has been destroyed yesterday or has been dead a year, there is not the least doubt. Better and more scientific reasons can be given for so doing than can be offered for the method of lengthy treatment. Facts can be arrayed in favor of filling immediately, where but a vague hypothesis is put forth in favor of the other method. If the root be cleansed it can be filled at once, and it can be cleansed as well in one sitting as can be done in any number of sittings. If the apex could be perfectly stopped without disturbing the contents of the canal, that tooth would last as long under similar circumstances as one whose root was filled throughout solidly with gold.

The apical foramen is the only inlet and outlet of the pulp canal and when perfectly stopped the work is done, and the more quickly you stop it the better will be the chances for success.

Always place the dam about the tooth before opening the pulp chamber, and use nothing but carbolic acid crystals with enough alcohol to make them liquid, using smooth broaches to work it into the canal and by these means clean carefully; when cleansed use hot air to dry. The canal is now ready to be filled. This is done by pumping in gutta-percha dissolved in chloroform and with points made of orange wood. Be sure the first point entered goes to the apex. The root canal can by these means be well filled, and if any bugs remain alive after the dose of acid, hot air and chloroform, they may eat the gutta-percha, for this is the only harm they can do.

Lastly we come to the illusion, some of our professional brethren are affected with, when construing certain portions of the "Code of Ethics." This illusion is as peculiar as it is serious. It leads the man who happens to possess the title of D. D. S. or M. D. to look down with contempt on those who are not so fortunate; yet, in many instances, the one who holds the title is so far inferior regarding capabilities, to the one who does not, that no comparison can be drawn between them. A diploma does not enable one to fill a tooth any better. It signifies only that the happy owner has learned the *a b c* of his profession. There are in the profession most excellent dentists, men of unapproachable moral character, whose mental abilities cannot be questioned, who received diplomas years after they had learned to fill a tooth, and their patients know no better. Why? Because their ability makes them modest.

On the other hand some of the titled gentlemen laboring under the strain of an illusion, think the public should know they are graduates and never miss an opportunity to so inform them. With a big flourish they sign themselves "Doctor," and on every occasion criticise the work of a brother dentist in the presence of their patients. Have not these same men seen more successful work than failures from the same operator? Yet there seems to be a glorification in such actions and the only way it can be accounted for is that they suffer from an illusion. We can but hope that as we advance the illusions will pass away and that the coming dentist will be in the near future—"A man that all should follow; one who works and prays; for his work is his prayer, and consecrates his life to the sublime ideal of his art, till art and life are one."

JOINT MEETING OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

[Reported for the OHIO JOURNAL OF DENTAL SCIENCE by "Mrs. M. W. J."]

(*Continued from page* 465.)

DR. GILMER read a paper demonstrating the construction of

GILMER'S CROWN.

Our object being "the greatest good to the greatest number," we find many patients needing our services who are financially unable to have the gold and porcelain crowns now used. For them we need a crown at low cost of material and time. With this end in view Dr. Gilmer constructs a crown of Weston's metal and platinum band for the posterior teeth. For the anterior teeth a crown with a gold band and porcelain face is readily made as follows: The band is cut with slots in the upper portion. This is filled with modelling compound and placed in position and the teeth closed to give the articulation. This is further carved as necessary and invested in plaster. The wax is then removed, the plaster drilled and Weston's or Watt's metal poured in, using as a flux chloride of zinc which attaches the metal to the band. A pin of wood is trimmed to conical form and heated till all moisture is removed, with this the metal is forced into every crevice. A porcelain facing is readily adapted, and a crown is thus easily and cheaply made for those who cannot afford anything else. If a post is wanted it should be placed in position in the modelling compound.

The papers on Operative Dentistry were then discussed in the order in which they were read

The paper of Dr. How was passed without discussion.

Dr. W. H. Atkinson said he would be the last to discourage investigation and experiment, but he would ask what good could result from the experiments of Dr. Kells. We all know that the enamel serves as protection from thermal shock. Such experiments do not belong to this body; we are not all beginners.

Dr. C. N. Peirce said he was delighted with the exactness of the experiments, but that he could not agree with the conclusions reached, as the physiological or pathological conditions of the tooth were entirely ignored. The pulp is protected from thermal shocks when normally protected. Gutta-percha over an exposed pulp is nothing but a mechanical covering protecting from disintegrating exudations, but having no action on the tissues. If the surface is cauterized, the eschar affords a non-conducting surface, and the pulp can be covered and saved. It might be saved with gutta-percha alone if there were no exudations.

Dr. Kells said he was not an advocate of capping exposed pulps. If he were to cap one hundred, he should expect to have one hundred failures. Only seventy-five might come to him, but the other twenty-five would go to some one else. He destroys at once if actually exposed; if nearly exposed but covered with dentine he uses gutta-percha as a further protection and fills with gold or amalgam. The best cap is the natural one of dentine. If very thin he would put a layer of oxychloride and carbolic acid; then harder oxychloride, then gutta-percha, and then a metal surface filling, having it four stories high. He doubts that a thin layer of cauterized material is a non-conductor. Some persons never get an abscess, but can tolerate a dead tooth for ten or fifteen years.

Dr. J. J. R. Patrick said that once the cry was, "For God's sake don't destroy a pulp," but of late years we hear less of this. The office of the pulp is to produce dentine; to deposit, to throw out; in old age the roots are frequently all filled up; the teeth, contrary to bone, ossify from the circumference to the centre. There is no proof that pulps are saved, it is against all experience, against all physiology. If you have the evidencc, there is nothing like success. There are no absorbents in the pulp.

Dr. Atkinson: It pains me to have the proof asked for what is so simple, what a child can appreciate. Why assert over and over again a doctrine that has been exploded for thirty years. In Cleveland, Ohio, a patient came with a left superior incisor, of which the pulp was exposed and bleeding. I excavated the tooth, touched the pulp with creosote, laid over it a gold cap concave to the root, and filled. One month later the patient returned with the filling out. I excavated more, and filled again, contouring as I always did. When I went to my book to record the fracture and look up the first charge, I noticed for the first time that it was the tooth in which the pulp had been exposed. I had not detected it in operating. The tooth remained in good condition as long as I could follow it. All this *blab* should be stopped and we should try and get a true conception of nutrition. We must have a good constitution and good protoplasm. Any tissue will be reproduced except glandular tissue.

Dr. Allport: There is no argument equal to proof. When we have the fact no argument equals it, when you *know* it is so. The older I grow, the longer I practice, the more experience I have, the less importance I attach to the pulp in the tooth of an adult. I would not destroy it if the prospects are fair. I have saved exposed pulps for many years, and have had the proof of the fact.

Dr. Atkinson: Secondary dentine will recover the pulp completely.

Dr. Allport: It is a possibility under favorable circumstances, but it is not the rule, and is not advisable in all cases. We should not become extravagant advocates of a thing because it succeeds once. Success depends on the constitution.

Dr. R. R. Freeman said he had been taught by old teachers, now present, that it was possible to save exposed, bleeding pulps and he was conscious of the fact of having saved them. Years after the same teeth come back with other cavities of decay and the pulp wss found living. In one case, a tooth with a capped pulp, was found exposed and bleeding from another cavity two years later, and capped again. Three years later it came back a third time in the same condition, with a large exposure of live pulp. As the patient would give his teeth no care, the tooth was extracted.

Dr. Patrick: Had it given any pain?

Dr. Freeman: He came back for that reason, each time. He did not come until goaded into it by suffering. He said he was sorry to hear Dr. Allport say that he does not attempt to save as frequently as formerly. He intends to keep on. If they are going to die they die more kindly when we try to save them.

Dr. Atkinson: You don't like to kill babies for the sake of having a funeral!

Dr. Story, (Dallas,) said he was glad to hear others say they could not save nerves by capping. He had been afraid he was the biggest fool in the meeting because he couldn't save them. He had capped a good many, at one time, and he had a flourishing business for sometime afterwards.

Dr. Cravens said that from the time a tooth was fully formed, the pulp was endeavoring to kill itself by progressive calcification. In the mature tooth the pulp is of little service. In old people the dentine is quite insensible, the tubuli being plugged up; there is no further function of nutrition, and the process of calcification destroys the pulp.

Dr. Atkinson said that was the case only in ruminants.

Dr. Morgan said that nature removes all extraneous matter, and would remove the pulp if it was of no further use. The vitality of the dentine depends on the pulp, and a partially divitalized tooth cannot be as good as one that is living. When encroachments have been made on the pulp it has been through the efforts of nature to supplement the function of that organ. Anything that lessens the vitality of the tooth is deleterious.

Dr. Taft said that he was surprised at the position taken by so many. There is no doubt but that after the destruction of the pulp the dentine and enamel begin to deteriorate; there is a loss of continuity of structure, and the tooth breaks down independent of decay; it comminutes and passes away. There is a deterioration under attrition which does not occur in teeth with living pulps. The dentine lives and retains its sensation through the pulp which supplies nutrient material. This function does not cease with the completion of the tooth; and who can say when it is complete? Changes are continually going on; the dentine is becoming more dense, the tubuli filling up. In the preservation of the pulp, many things are to be taken into consideration; we must have a knowledge of systemic conditions; there must be an ability to discriminate conditions—how long the pulp has been exposed; whether due to accident or to decay; whether it has been subjected to irritation; whether it is diseased; much also depends on the manipulative ability of the operator. Wherever it appears at all feasible, he tries to preserve the pulp alive.

Dr. E. T. Darby said that Dr. Taft had taken the very words out of his mouth, and said what he would have said, better than he could have done. Seventy-five per cent. of all recent exposures can be saved, but discrimination must be used and—not attempt, for instance, to cap with acute pulpitis—that would mean failure in ninety-nine cases out of a hundred. His method is the one that he has followed for twenty-five years, the first application being oxide of zinc and creosote, next to the exposed pulp; then a filling of oxychloride or oxyphosphate of zinc—the latter when rapid hardening is desired. When this is hard, it is partially excavated and the filling finished with gold.

Dr. Patrick asked him if he had ever saved an inflamed, palpitating, ruptured pulp?

Dr. Darby said he did not try if they had been allowed to remain in that diseased condition a long time, but he had often saved bleeding pulps. In one case he had, in the course of nine years, capped the pulp of one tooth three different times, from three different cavities of decay, capping as described and filling with gold, and that pulp is alive to-day, responding to every test.

Dr. J. D. Patterson said we lose sight of one important factor, and that is the patient—the objective end of the forceps. We must consider in which way we can give him the greatest comfort, and confer the greatest benefit. If we find that extirpation will be of most practical benefit, that should be our guide.

Dr. Freeman does not agree with Dr. Taft as to the deterioration of pulpless teeth. He considers it next to impossible to save pulps after irritation and congestion. In case of pulpitis, the pulp should be destroyed with arsenic. The cementum, nourished by the pericementum, will keep the tooth in good condition.

HISTOLOGY AND MICROSCOPY.

Chairmen, Dr. Frank Abbott, American; Dr. Jno. G. Mc Culloch, Southern.

The first paper read was by Prof. I. P. Wilson, (Burlington), entitled

THE APICAL FORAMEN IN ITS PHYSIOLOGICAL AND PATHOLOGICAL RELATIONS.

This paper describes clearly the structure of cementum in its normal state, and the changes in diseased conditions, reaching the conclusion that though devitalization of the pulp does not interfere with the vitality of the pulp, the apical portion of the cementum may be destroyed and necrosis follow injudicous applications. Hence the importance of using arsenic with caution; if the first application fails there is danger in a second, and still more in a third, many incurable abscesses resulting from arsenious poisoning.

Dr. Atkinson characterized this paper as an awakener, bearing closely on the occult movements in nutrition and denutrition. Whenever we have reproduction of tissue there must be retrograde metamorphosis to give the gluey material for mortar. Men do not understand the difference between inflammation and ordinary activity—oxygenation. Arsenic acts through the affinity of arsenious acid for the protoplasmic tissue in the pulp—the semi-fluid portions. Men express their strong conviction that microbes enter into tissue territory and set up a retrograde ferment—make a hell—raise Ned; that microbes produce pus; they talk learned nonsense and say nothing. The prophet of old prayed that he might be delivered from the memory of his former sins, but we who have had a better illumination, pray that we may remember them that we may avoid them.

(To be continued.)

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

SEVENTH ANNUAL MEETING, AUG. 27, 1888, LOUISVILLE, KY.

The seventh annual meeting of the National Association of Dental Examiners was called to order Aug. 27, by the President, Dr. Geo. H. Cushing, who vacated the chair in favor of Vice-President Dr. T. S. Waters. Dr. Cushing being no longer a member of the Illinois State Board of Examiners, could not be considered a member of the National Association.

The following State Boards were represented at the first session :

Georgia, Dr. S. B. Barfield ; Illinois, Drs. C. R. E. Koch and R. N. Lawrence ; Indiana, Drs. P. G. C. Hunt and S. T. Kirk ; Kentucky, Dr. A. O. Rawls ; Maryland, Dr. T. S. Waters ; Mississippi, Dr. W. W. Westmoreland ; New Jersey, Dr. Fred. A. Levy ; Ohio, Drs. J. Taft and H. A. Smith ; South Carolina, Dr. G. F. S. Wright ; Wisconsin, Dr. B. G. Maercklein.

Drs. M. G. Marshall and L. G. Roberts, representing the Arkansas State Board, presented their credentials and joined the Association at a subsequent session.

A letter from Wisconsin State Board, presenting several points for consideration, was read and placed on file, the whole matter being referred to a committee of three, Drs. Taft, Koch, and Barfield, who, at a subsequent session offered the following report, which was received and adopted. The report explains the purport of the "Letter," which for the sake of brevity is omitted :

"Your Committee, etc., respectfully recommend the discontinuance of the practice of giving permits to practice dentistry, to students during the time of their college work, or before their graduation. We also recommend that any applicant for examination and license to practice dentistry, between the regular sessions of the respective State Boards, may be examined during such interim, by one or more members of a State Board, as may be designated by the said Board, and upon such examination being satisfactory, a permit may be issued to the applicant to practice dentistry till the next meeting of the Board and no longer. The examination and permit shall in no case exempt the candidate from an examination by the full Board, at its next regular meeting.

"Your Committee do not believe it advisable to have a uniform list of questions for examination throughout the country. We would recommend, however, that the State Boards embrace in their examinations the following branches, and that there be not less than ten (10) questions on each of these branches, viz :

Anatomy, Physiology, Pathology, Histology, Hygiene, Materia Medica, Therapeutics, Chemistry, Metallurgy, Operative Dentistry, Prosthetic Dentistry, Dental Jurisprudence.

"We suggest that each State Board formulate its own list of questions, and that the list be changed at least once each year, and that a standard of at least 75% of correct answers be required."

The following resolutions were adopted at the second session, Aug. 28:

"*Resolved*, That the resolutions appearing upon the records of this Board—the same having been presented in writing by Dr. Coyle at its meeting in New Orleans—the said resolution being in effect to prevent members of faculties from acting as members of State Boards of Dental Examiners, be hereby rescinded." Carried.

"*Resolved*, That a committee of three shall be appointed whose duty it shall be to coöperate so far as they can with the profession in the different States in securing a uniformity in the laws regulating the practice of dentistry in the States." Carried, and Drs. Taft, Rawls, and Barfield appointed as said committee.

"*Resolved*, That the State Boards be requested to furnish the Secretary of the National Association of Dental Examiners with a certified copy of the laws in force, and any amendments in their respective States, and their efficiency." Carried.

At the third session, 11 P. M., Aug. 29, the following list of recognized colleges was adopted, after much reconsideration and revision:

Baltimore College of Dental Surgery, Baltimore, Md. Boston Dental College, Boston, Mass. Chicago College of Dental Surgery, Chicago, Ill. Harvard University, Dental Department, Cambridge, Mass. Kansas City Dental College, Kansas City, Mo. Minnesota Hospital, Dental Department, Minneapolis, Minn. Missouri Dental College, St. Louis, Mo. New York College of Dentistry, New York City. Ohio College of Dental Surgery, Cincinnati, O. Pennsylvania College of Dental Surgery, Philadelphia, Pa. Philadelphia Dental College, Philadelphia, Pa. St. Paul Medical College, Dental Department, St. Paul, Minn. University of California, Dental Department, San Francisco, Cal. University of Iowa, Dental Department, Iowa City, Iowa. University of Michigan, Dental Department, Ann Arbor, Mich. University of Pennsylvania, Dental Department, Philadelphia, Pa.

Vanderbilt University, Dental Department, Nashville, Tenn. Northwestern College of Dental Surgery, Chicago, Ill. Louisville College of Dentistry, Louisville, Ky. Indiana Dental College, Indianapolis, Ind. Dental Department of Northwestern University, Chicago, Ill. Dental Department of Southern Medical College, Atlanta, Ga. Dental Department of University of Tennessee, Nashville, Tenn. School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.

The following officers were elected to serve the ensuing year:

President, Dr. T. S. Waters, Baltimore, Md.; Vice-President, Dr. S. T. Kirk, Kokomo, Ind.; Secretary and Treasurer, Dr. Fred. A. Levy, Orange, N. J.

Adjourned to meet at Saratoga, Tuesday, Aug. 5, 1889.

"Mrs. M. W. J."

Compilations.

"Gather up the Fragments."

THE EXTENT TO WHICH LEGISLATION CAN AID MEDICAL EDUCATION.

Mr. W. A. Purrington, the Counsel of New York State and County Medical Societies, read a paper last week before the Health Department of the American Social Science Association, showing the extent to which legislation can go in maintaining a proper standard of medical education.

Strange to say, there are some opponents to statutory regulation of medical practice who regard it as an infringement of the liberties of the citizen, and therefore unconstitutional; but Mr. Purrington says such legislation is based on principles approved by every judicial authority, and rests on the right of society to self-protection.

The stumbling-blocks in the way of every effort to achieve a wise medical legislation are, first, the ignorance and greed of the believers in, and practisers of, quasisupernatural methods of treating disease; second, jealousies among the more intelligent adherents to "isms"; third, jealousies between the mother-church of medicine and those of her children that wish to make of their specialties separate professions; fourth, the obstructions from vested interests that consider themselves threatened—the incorporated schools that have some capital invested, and regard their power to confer a diploma operating as a license to practise medicine as their chief stock in trade.

A logical medical law, he says, which of itself will be an educator, will recognize the fundamental principle on which all these statutes are to be defended, that already indicated, the right of the State to protect the health as well as the life and property of the citizen. One health statute will then be enacted and a responsible board created, that will have in charge the arrangements of quarantine and sanitation, and also the licensing of medical practitioners of every sort; for he contends that the dentist and the pharmacist should be recognized as medical men.

He thus sums up what, in his opinion, is all that legislation can do in aid of medical education:

I. By fixing a minimum age under which they (physicians, dentists, and pharmacists) will not be allowed to practise their calling.

II. By requiring of each of them a fixed term of study, of certainly not less than two graded years, leaving to the Board the care of details.

III. By requiring proof by examination or certificate that each candidate for license had studied, before beginning his professional course, at least those branches in which law students are examined in this State before they commence their legal studies.

IV. By declaring that no medical schools (including in the term schools of dentistry, pharmacy, and midwifery) shall be incorporated by special act, and providing a general law for the incorporation of such schools, only upon proof made of the possession by the incorporators of sufficient capital—say not less than a hundred thousand dollars—and a teaching plant, to justify the belief that the school will be capable of exercising faithfully its franchise. Such an act should contain stringent provisions for its own enforcement and for the forfeiture of abused charters.

V. A minimum course of medical study should be prescribed, in which a grade of at least seventy per cent. should be attained on examination. The regulation of all details of the examination should be left to the Board. But the topics in which the examination should be had might well be specified in the statute. It might be well to omit the topics of therapeutics and materia medica, upon which all medical heresies have been begotten by unscientific minds, inferring that one who should creditably pass his examinations in botany, chemistry, physics, anatomy, surgery, physiology, hygiene, diagnosis, obstetrics, and microscopy, especially if his clinical examination should show him to be educated in a true sense to observe and draw sound deductions from observation, might be trusted to form his own conclusions and pursue his own studies as judgment should dictate in the field of therapeutics. The law can have nothing to do with medical theories. The utmost it can do successfully is to prescribe that none shall practise medicine except persons educated in those branches of science that all admit are essential to an understanding of morbid conditions of our species, and possessed besides of a fair general education.

VI. Finally, the law should not recognize any diploma as of itself conferring a right to practise medicine; even if the possession of such document should be required as an antecedent to examination by the Health Board, it should not be allowed to take the place of such an examination. Any scheme of medical legislation will hereafter embrace that great safeguard against imposture and efficient tracer of frauds, the system of registration, where no one is allowed to practice medicine who has not made a public record under oath of his name, origin, and credentials for a license.—*Med. Record.*

Editor's Specials.

"Write the Vision and make it plain."

SOCIETIES AND SOCIETY WORK.

At the meeting of the Ohio State Dental Society, a committee was appointed to investigate the advisability of organizing district societies throughout the State, and taking such steps as are necessary to complete such organization.

This plan has already been adopted by several States, these being divided as best suited for the work. For instance, New York State was divided into districts corresponding to the congressional districts of that State, while Illinois was divided into five districts, a northern, eastern, western, southern, and central. Reports show that such organizations are proving beneficial, not only as leaders to the State societies, but by stimulating a desire for societies and society work among dentists who otherwise would make no effort to obtain such advantages. Many dentists do not realize the true advantages of society work, perhaps have never attended a meeting for such reasons as being so far away, costing so much to go, and losing so much time in attending, etc. This class of dentists need a stimulant; societies nearer home, expenses light, meetings interesting, a cordial welcome, character of meeting more like that of a social talk.

The district societies furnish this opportunity and they should be organized in every State, and in such numbers as to cover the entire territory.

Local societies are of advantage wherever practicable, provided the work is entered into with enthusiasm and earnestness.

Consider the number of local, county, and district societies the medical fraternity have. If such gatherings were not valuable would there be so many of them? Dentists have been too slack in this kind of work and slow to recognize the advantages of such organizations.

There having been so few dental societies is no doubt one great reason why so many students on leaving college settle down and depend upon their stored knowledge to carry them through with the work year after year, apparently ignoring the fact that new ideas are being advanced and new methods, appliances, etc., constantly brought out.

We need something to draw these dentists out of this slough and to keep others from falling into it. If a society be organized in their section, they may become interested and greatly benefited and in turn a benefit to the profession.

It is true that many (but by no means all) take some journal, or journals; but though the society discussions are taken verbatim they have lost the impressiveness their author gave them. Besides, many thoughts are given that do not reach the journals, and methods, appliances, and ideas presented "between the acts" that are too valuable to lose.

Go to society meetings for the good of the cause; to acquire all you can and to give to the profession what new things you have learned yourself.

The sooner dentists in general realize the necessity and advantages of societies and society work, the sooner will the profession reach that point of enlightment and free interchange of thoughts and ideas that is required for its true advancement.

B.

THE OHIO STATE DENTAL SOCIETY.

The fifth annual meeting of the re-organized society was held at Cincinnati, October 16, 17, and 18, 1888. Fully two-thirds of all the members were present, at some portion of the meeting, and many other dentists at some of the sessions. But two sessions were held each day and the meeting continued but three days so that there was a lack of time to transact all business and carry out the program in full. Consequently three valuable papers were of necessity dropped. The attendance upon meetings was not as constant as could be desired, demonstrating the fact that societies should not be held where there are so many outside attractions. It may have been the means of bringing out more dentists, but it really was at the expense of the interest of the meeting. To receive full benefit of any society meeting the dentists should assemble promptly at the appointed hour, and remain throughout every session. How much benefit does a man derive from a meeting when he attends but a fractional part of the sessions, being more interested in sights outside? The result is that he goes home and says that the meeting itself was a failure, while those who remained through the entire sessions can testify that it was a good meeting and a success.

Next year we hope to see more clinics, ample time to carry out the program fully, and no board, or committee work or outside attractions interfere with the proceedings.

The following new members were elected: O. N. Heise, D. W. Clancey, W. M. Williams, R. E. Taylor, W. D. Phillips, and Henry Smith, Cincinnati; L. P. Bethel and D. A. Harroun, Toledo; A. O. Beeks, Oxford; F. F. Dowds, Canton; L. H. Mc Donald, Norwalk; R. E. Wyatt, Lockland; W. P. Hall, Piqua, and Otto Arnold, Columbus.

The officers for the ensuing year are as follows: President,

C. M. Wright, Cincinnati; 1st Vice-President, W. H. Sedgwick, Granville; 2nd Vice-President, W. H. Hague, New Vienna; Secretary, J. R. Callahan, Hillsboro; Treasurer, Chas. I. Keely, Hamilton.

Board of Directors.—D. R. Jennings, F. H. Rehwinkel, Chas. Welch, J. Taft, H. H. Harrison, E. G. Betty, W. H. Hague, C. H. Harroun, C. M. Wright, F. C. Runyan, H. A. Smith, J. E. Robinson.

Committee of Arrangements.—Drs. J. E. Robinson, J. R. Bell and C. R. Butler.

Committee on Voluntary Essays.—M. H. Fletcher, F. S. Maxwell, and J. R. Callahan.

Committee on Membership.—C. R. Butler, L. E. Custer, and F. H. Rehwinkel.

Next meeting will be held at Cleveland, the last Wednesday of October, 1889. B.

REPORT OF COMMITTEE OF OHIO STATE DENTAL SOCIETY, SUBMITTED OCT. 17TH, 1888,

ON THE DEATH OF DR. GEO. W. KEELY, OF OXFORD, OHIO.

WHEREAS, By the death of Dr. Geo. W. Keely, of Oxford, Ohio, this Society, and our profession at large, have been deprived of a valuable and honored member, and as individuals, we have lost a much beloved brother and friend; therefore

Resolved, That the Ohio State Dental Society shall provide small mourning badges to be worn by the members of the Society for thirty days from date, as a slight token or emblem of our deep sorrow, which cannot be expressed in words.

Resolved, That the heartfelt sympathy of this State Society, be tendered to the bereaved widow and children of our departed friend, and that a copy of these resolutions be spread upon the minutes of the Society.

Signed,
C. M. WRIGHT,
J. TAFT,
H. A. SMITH,
E. G. BETTY,
R. L. EVANS.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 513 Jefferson St., Toledo, O.]

THE FATAL DOSE OF BORACIC ACID is, according to Gaucher, two and one-half ounces daily, continued for at least ten days.

REMEDY FOR HEADACHE.—Salicylate of soda, fifteen grains in half a glass of water, taken internally is said to stop any kind of a headache in fifteen minutes time.

MIXING AMALGAM.—DR. PEABODY says where amalgam is mixed in the hand it is best to cover the hand with rubber-dam and cover the finger with kid, to avoid excreted material being mixed with the amalgam.

TAKING IMPRESSIONS.—DR. J. P. CAMPBELL cuts a hole in impression trays through which he can pass his finger and force the plaster in every direction desired. He obtains more accurate impressions in this way.

CHROMIC ACID FOR MUCOUS PATCHES.—A solution of chromic acid is perhaps the best application to mucous patches, especially to those in the mouth and pharynx. Use from two to five grains to the ounce.—*Cin. Lancet-Clinic.*

FETID BREATH.—

℞.	Sodii Benzoas - - -	2 drachms.
	Listerine (Lambert) - -	8 ounces.

M. Sig.: Use as a mouth-wash after meals.

UNIVERSAL ANTIDOTE.—A universal antidote is made by mixing equal parts of calcined magnesia, powdered charcoal, and hydrated oxide of iron. The mixture is simple and harmless, and is given in cases where the poison is unknown.—*Med. Brief.*

TO OBTAIN A SMOOTH MODEL.—DR. MORGAN says: If after varnishing an impression with shellac, it be dropped into a bowl of warm water and allowed to remain some minutes before pouring plaster into it, the resulting model will have as smooth and good a surface as when metal is used.

FOR TOOTHACHE.—The following is recommended: Ricinated collodion (collodion with which castor oil has been mixed to make it flexible), and crystallized carbolic acid, in equal parts, are put into the cavity, and a bit of cotton placed over the mass and left long enough to protect it from the saliva. It frequently relieves pain instantaneously.—*Pac. Rec.*

KEEP POSTED.—DR. A. HOLBROOK says: With the aid of innumerable societies scattered over the land, the score of dental journals at prices within reach of all, and easy access to busy, earnest brother workers, there is no excuse or palliation for any dentist who will not keep himself posted in all that is being done in his special calling.—*Dental Review.*

OIL OF TURPENTINE.—DR. LOVE says: A point important to keep in mind is, that the oil of turpentine--cheap and always within reach—is one of the most valuable remedies in the materia medica, as a local and general stimulant, as a germicide and preventer of fermentation, and last, but not least, internally administered, as a checker of bleeding.—*Med. Register.*

GERMICIDAL PROPERTIES OF COPPER AMALGAM.—DR. W. X. SUDDUTH says: I have made a few tests in that regard and my judgment is that its germicidal properties are very low indeed. Certain conditions may be brought about by which chemical changes will take place, and in that case it may have slight power as a germicide; but as a dependent I think its value is more due to its adaptability and non-shrinkage, by which it forms a perfect stopping for teeth, thus preventing entrance of the micro-organisms into the cavity.—*Ind. Prac.*

DIGITALIS AND CHLOROFORM.—DR. LOUIS LEWIS says: A dose of digitalis, given immediately before the administration of chloroform for operations, would, it appears to us, act as a prophylactic by causing better contraction of the ventricles and steadying and regulating the pulse. In cases where the heart is known to be weak, the tonic action of digitalis might here possibly avert a calamity; and certainly in a judicious dose could effect no harm. Its beneficial action on the "shock" produced by the operation is also worthy of consideration.—*Med. World.*

PULMONARY HYGIENE.—Chest gymnastics are of undeniable utility to flat-chested people, round shoulders, and to those in the incipiency of phthisis. By these exercises full inspirations are established, and the least available parts of the lungs—the apices—receive their full compliment of air, and are stimulated to throw off any existing infiltrated products. Lung diseases usually commence at the apex, through the peculiar anatomical disposition of the parts, which exposes the centre and base of the lung more freely to the action of air than the apex.—*Med. World.*

Gold Solution.—Dissolve the gold in *aqua regia* (one part nitric to two parts of muriatic acid); evaporate nearly dry; dilute with water; precipitate the gold with aqua ammonia; take up the precipitate with cyanide of potassium, ½ oz. to 1 dwt. of fine gold; filter clear; the plate to be gilded is first to be polished and washed perfectly clean; after washing do not touch it with the fingers; put it in the fluid and place a strip of zinc against it; when coated with the brown precipitate remove, wash, and polish. This process may be repeated several times, until the desired color is reached.—*Western Dent. Jour.*

New Method of Forming a Vacuum in Plates.—As soon as the model is separated from the impression, and before the plaster becomes thoroughly hard, I press a number of the smallest round-headed gimp nails into the model, covering as much of the palatine surface as I choose. A few marks with the lead pencil enables me to place them regularly. They are tapped down closely, and the case is carried forward in the usual manner. Before putting the rubber into the flask, a coat or two of liquid silex, diluted, should be carried over the model with its little projecting nail heads. There is no further work or trouble about it, and no more time is taken up than is required by the adjustment of a vacuum form. A good strong adhesion is the result, and no unpleasant results follow. It will work as well with cast plates as with vulcanite, and is serviceable in lower as well as upper plates.—*So. Dental Jour.*

To Re-silver Small Mirrors.—Clean the bare portion of the glass by rubbing it gently with fine cotton, taking care to remove any trace of dust or grease. If this cleaning be not done very carefully, defects will appear around the place repaired. With the point of your knife cut upon the back of another looking-glass around a portion of the silvering of the required form, but a little larger. Upon it place a small drop of mercury; a drop the size of a pin's head will be sufficient for a surface equal to the size of the nail. The mercury spreads immediately, penetrates the amalgam to where it was cut off with the knife, and the required piece may now be lifted and removed to the place to be repaired. This is the most difficult part of the operation. Then press lightly the renewed portion with cotton; it hardens almost immediately, and the glass presents the same appearance as a new one.—*Scientific American.*

SECRETORY FIBERS OF THE SYMPATHETIC SUPPLYING THE PAROTID.—DR. J. N. LANGLEY says that it is usually said that the parotid receives trophic but no secretory nerve-fibres from the cervical sympathetic, because its stimulation rarely excites any secretion. The author found, however, that stimulation of the sympathetic was always followed by secretion of the parotid, if the gland was previously prepared to secrete; or, in other words, the sympathetic secretory fibres are non-effective unless the gland has been supplied with a considerable amount of oxygen. The gland never failed in the author's hands to respond to sympathetic stimulation if it was previously prepared to do so by irritation of the chorda tympani, especially if a small dose of atropine sulphate had been injected into a vein. The relations of the submaxillary and sublingual glands to their cerebral and sympathetic nerves were found to be of a nature similar to the foregoing.—*Jour. of Phys.*

NAPHTHOL AS AN ANTISEPTIC.—DR. BOUCHARD, of the Paris Academy of Sciences [*Pharmacentische Zeitschrift*] strongly recommends naphthol as an antiseptic, especially for the disinfection of parenchymatous tissue and cavities which are only reached with difficulty. He recommends it for the following principal reasons:

1. It is only slightly soluble, and in the above cases insoluble antiseptics are preferable to those that are soluble, as they are not absorbed, and so do not affect the general organism, but still make the fermentation or growth of micro-organisms locally impossible.

2. It is five times as active as carbolic acid, three times as active as creosote, and is superior to sublimate, which is ten times as active as naphthol, because it is one hundred and eighty-seven times less poisonous.—*International Jour. of Surg. and Antiseptics.*

The Universal Solvent.—London *Iron* gives an account of what it calls the universal solvent. This fury of the chemical world is the element fluorine. It exists peacefully in company with calcium in fluorspar, and also in a few other compounds; but when isolated, as it recently has been by Henri Moissan, it is a rabid gas that nothing can resist. It combines with all metals explosively. When they are already combined with some other non-metallic elements it tears them from it and takes them to itself. In uniting with sodium, potassium, calcium, magnesium, and aluminum, the metals become heated even to redness by the fervor of its embrace. Iron filings slightly warmed burst into brilliant scintillations when exposed to it. Manganese does the same. Even the noble metals, which at melting heat proudly resist the fascinations of oxygen, succumb to this chemical siren. At a moderate temperature glass is devoured at once, and water ceases to be water by contact with this gas.

Iodoform as an Antiseptic (Dr. Schnirer).—The author undertook a large series of experiments in the bacteriological laboratory of Prof. Frisch, of Vienna, to determine the antiseptic value of iodoform. He sums up the results of his studies as follows: It cannot be shown that iodoform possesses any of those essential virtues that a true antiseptic must have. The apparent discrepances which exist in the so called theoretical results of investigations, such as my own and the practical results daily attained are really only apparent, for the most enthusiastic advocate of iodoform uses a true antiseptic, such as corrosive sublimate, silico fluoride of soda, or carbolic acid, during the performance of operations.

Iodoform is a valuable remedy in dressings; it possesses a protective and sedative effect, and largely aids in absorbing moisture from the wound. This latter effect is enhanced if used in the shape of iodoform gauze.—*Wiener Med. Presse.*

The Use of Antiseptics.—Dr. Black says: Many of the experiments made for the purpose of finding just what concentration or dilution of any, or all, the antiseptics may be required to destroy microbes are misleading. In our test tubes we use a certain solution and the strength of that solution is maintained during the experiment. In practice it is different. We employ a certain solution upon a wound and it is immediately diluted by the secretions from that wound. Furthermore it is removed by these secretions so quickly, that it fails in its action, and this may often occur in aqueous solutions or those freely soluble. Those very slowly soluble, as iodoform, may be retained longer and with a more continued application; oils may be used for the same reasons. Dentists may use antiseptics with much more precision than the surgeon, because the application and retention of the medicament free from admixture with some foreign matter is so easy. An antiseptic sealed in a root canal of a tooth can be retained for many days, but if placed upon a suppurating surface quickly disappears. We therefore still use them in the manner and quantity suggested by clinical experience, rather than following scientific expositions of their powers, and from the nature of their employment must, for the present at least, continue to do so.—*Dental Review.*

ANTISEPTIC SUPERSTITIONS.—DR. ALFRED S. GUBB says: The more one looks into the subject, the more one is disposed to question the value of antiseptics as such. Bacteria have been found to thrive in a ten per cent. solution of carbolic acid—a stronger dose than could ever be brought to bear on a wounded or abraded surface for more than a short time, and, more recently, the gravest doubts have been raised as to the value of that pet antiseptic agent—iodoform. Its antiseptic qualities being impugned, its familiar but disagreeable odor will probably insure its relegation to the limbo of deceased remedies. Experience shows that antiseptics as a class, in doses which it is safe to use, only retard putrefactive changes, and this often only to a trifling extent. The prompt and instant removal of materials liable to undergo putrefactive changes is the only real protection against their taking place, and agents which only retard the process are apt to prove a delusion and a snare. When we turn from the employment of disinfectants and antiseptics in surgery to their domestic use, their arrant futility, except for temporary and strictly localized conditions, is more striking than ever. The sprinkling of a diluted solution of carbolic acid, or Condy's fluid, or the placing of a little chloride of lime or other preparation in a saucer, is and must be absolutely without importance. Deodorizers they doubtless are, but this quality is not an unqualified advantage. Like salicylic acid in milk, they may serve to mitigate the effect of want of cleanliness, but for that very reason their use is to be deprecated, since without them a determined effort might be made to insure purity of air by the removal of the causes of contamination by proper ventilation. The sooner the real facts of the matter are ascertained and freed from their semi-superstitious surroundings, the more rapidly will the fundamental principles of absolute cleanliness be understood and practiced.—*Med. Register.*

Poisons and their Antidotes.—The following brief summary of the most rational and simple antidotes to the commoner forms of poison in daily use by artists and artisans has been compiled for the *American Analyst* by Dr. Francis Wyatt, and it will be seen that he has suggested the most appropriate to be applied in any emergency, pending the arrival or in the total absence of a skilled medical practitioner.

Poisons.—1. Acid—Carbolic, sulphuric, nitric, muriatic, nitro-muriatic, creosote, iodine, phosphorus.

Antidotes.—White of egg well beaten up with water. A teaspoonful of mustard flour in a cup of hot water. Very thick lime water—(in case of sulphuric, nitric, muriatic or nitro-muriatic acids.)

Poisons.—2. Chromic acid, chromates, all preparations or compounds of chromium, antimony, copper, mercury or zinc.

Antidotes.—Abundance of white of egg in water. A teaspoonful of mustard flour in water. Copious draughts of an infusion of salt herbs.

Poisons.—3. Ammonia, soda, potash, alkaline, silicates and sulphates.

Antidotes.—Strong vinegar and water. Large doses of oil. Large doses of milk.

Poisons.—4. Prussic acid and its salts, all cyanides and sulpho-cyanides, oil of bitter almonds and nitro-benzine.

Antidotes.—Continuous and heavy douches of ice-cold water over the head and spinal column. Mustard plasters on the stomach and soles of the feet. Prevent sleep.

Poisons.—5. Ether, petroleum, benzine, fruit essence, concentrated or absolute alcohol.

Antidotes.—Plenty of mustard flour in large quantity of hot water. Cold-water douches. Fresh air. Prevent sleep absolutely.

Poisons.—6. Compounds of baryta and lead.

Antidotes.—A teaspoonful of mustard flour in warm water. Strong solutions of Epsom salts and Glauber's salts in cold water.

Poisons.—7. Compounds of arsenic.

Antidotes.—A teaspoonful of mustard flour in warm water. A teaspoonful of dialysed iron mixed with the same quantity of calcined magnesia, every five minutes for one hour. Then plenty of oil, or milk, or some mucilaginous tea, say linseed.

Poisons.—8. Oxalic acids and its salts.

Antidotes.—Very thick paste of lime and water by large spoonfuls at the time. After several of these, large draughts of lime water. Finally, 4 ounces castor oil.

Poisons.—9. Nitrate of silver.

Antidotes.—Large doses of ordinary kitchen salt dissolved in water, after which one teaspoonful of mustard flour in warm water.

Poisons.—10. Nitrous fumes of vapors, arising in vitriol or chemical works.

Antidotes.—Frequent and small doses of strong acetic acid—the stronger the better.—*Scientific American.*

Books and Pamphlets.

A PRACTICAL TREATISE ON CROWN AND BRIDGE-WORK. By GEO. EVANS, New York. pp. 263, finely illustrated with 500 cuts. Philadelphia: S. S. White Dental Mfg. Co. 1888. Cloth, price $3.00.

As indicated by the title, this book is wholly practical and upon a subject that is of vital interest to every practitioner at the present day, but which is by no means thoroughly understood by all. The author in his preface says: "Much that is new in dentistry and much more that is, by many practitioners at least, only imperfectly understood, is involved in crown and bridge-work. Properly practiced it approaches a fine art; but misapprehension of the principles underlying it, lack of judgment in their application, and improper practice have conspired to prevent its general acceptation by the profession, and it has in consequence been only partially indorsed or even wholly condemned when a better understanding would have insured its hearty approval. Still, its possibilities are seen to be so great that at present no branch of dentistry more engages the attention of practitioners, and in no other is a livelier interest or a greater desire for real information manifested."

The first part of the book pertains to the prepartory treatment of teeth and roots for crown-work.

Part II artificial crown-work. First, porcelain crowns are considered and a thorough treatise on the methods of preparation, adaptation and mounting is given. Of these the Bonwill, How, Gates, Foster, Howland, Logan, Brown, and new Richmond crowns are presented. Porcelain crowns with and without gold collar attachment, crowns with rubber attachment, gold collar crowns with porcelain fronts, gold seamless crowns, special forms of gold and porcelain crowns as the Parr, Leech, and Low, are described in the following chapters.

Part III is devoted to the various forms of bridge-work, mode of construction and application. The methods of Winder, Litch, Starr, Richmond, Waters, Parr, Low, Knapp, Mellotte, and Brown are fully described.

Part IV treats of materials and processes used in crown and bridge-work.

It is an admirable work, written by one who is thoroughly versed in this department. One prominent feature is the profuse illustrating of the different appliances which renders every step of the operations clear to the reader.

The book is neatly bound in cloth and of its typographical appearance we need but say that it was printed by the S. S. White Co. It is a work no progressive dentist should be without.

THE PRACTICE OF MEDICINE OR THE SPECIFIC ART OF HEALING. By I. J. M. Goss, A.M., M.D., Professor of the Practice of Medicine in the Georgia Eclectic College of Medicine and Surgery. Cloth, pp. 579. Price $5.00; leather $6.00. Chicago: W. T. Keener, 96 Washington St. 1888.

This book is written in conformity with the "Eclectic School" of Medicine. The first chapters are devoted to Principles of Medicine, Diathesis, Vegetable Parasites, The Laws of Therapeutices, or the Specific Action of Medicines, Dietetics, Dose of Medicines, General Remarks upon the Leading and most Prominent Symptoms of Disease. The following chapters treat upon the various diseases: Their Cause, Pathology, Symptoms, and Treatment.

The author says: "While I was taught the time-honored system of Paracelsus, I do not hold to exclusive dogmas, nor have I allowed predilections to sway my judgment. I have endeavored to avoid extremes, and give that treatment for diseases which an experience of forty-five years has proven successful."

"One of the main things to guide us in the treatment of disease, is a rule by which to select a remedy to meet the morbid condition pointed out by the symptom or symptoms. This feature has been specially adhered to in this work. Each individual remedial agent has its affinity for a part, organ, or tissue of the body, and has a definite physiological action on this part, organ, or tissue in health. It will be a rich boon to suffering humanity when physicians shall cease the routine prescribing, and, ignoring all sects in medical practice, study thoroughly all their remedies, so as to fit them to morbid conditions."

The author is an ever ready and fluent writer and has stated fully and concisely the subjects under consideration. Symptoms of disease and treatment have especially been thoroughly presented and prove the author's ability in this direction. His former works have always met with a ready sale, and thousands of copies are in the hands of the best and most successful practitioners in all parts of the country. This work is designed to take the place of the American Practice of Medicine and is far superior to it, being brought up to the exigency of the times.

The book is neatly bound in cloth and the arrangement and typographical appearance are very creditable.

A COMPEND OF MATERIA MEDICA, THERAPEUTICS, AND PRESCRIPTION WRITING. By Sam'l O. L. Potter, M.A., M.D. Philadelphia: P. Blakiston, Son & Co. 1888. pp. 248. Cloth, price $1.00; interleaved $1.25.

This is the fifth edition of number six of the popular compends. The work has been entirely rewritten and enlarged, having undergone a careful revision. The sections on preparation and classification of medicines have been expanded seventeen pages and in that portion of the book devoted to materia medica, new matter has been inserted, treating of 75 additional articles. No words are wasted but everything told in such a concise yet complete way that the reader can receive at a glance, the important points of the materia medica, preparations, doses, antidotes, physiological action and therapeutics of medicinal agents employed by physicians of the present day. The book contains also many pages on prescription writing and incompatibility. So convenient for ready reference it should be placed in every dentist's library.

A SYNOPSIS OF THE PHYSIOLOGICAL ACTION OF MEDICINES. By Louis Starr, M.D., and James B. Walker, M.D. Philadelphia: P. Blakiston, Son & Co. Cloth, price 75 cents.

This little manual has been prepared for the use of students. A kind of outline is given to assist the student in the use of text-books and direct his labors in the somewhat difficult field of the physiological action of medicines.

A PRACTICAL TREATISE ON THE DISEASES OF THE HAIR AND SCALP. By George Thomas Jackson, M.D. New York: E. B. Treat. Cloth, pp. 350. Price $2.75.

As medical knowledge increases and physicians become more and more familiar with the minute changes in the tissues, consequent upon diseased conditions, the greater becomes the necessity for works like that under notice, exclusively devoted to the consideration of the pathological changes in a single organ or tissue. A proper study of the symptomatology and treatment of all diseases, even of a series of organs, within the limits of a single volume, is impossible. Who would, a few years ago, have thought that a volume of 350 pages could be profitably devoted to a study of diseases of the hair and scalp? Yet, if any one entertains doubt upon the subject, a brief examination of this one will give convincing evidence.

There is scarce a man who is not vitally interested in the subject matter of this book. Alopecia, or baldness, for instance, is becoming frightfully common, and few laymen can give an intelligent opinion of even one of its causes. Physicians, too, are lamentably ignorant concerning this so common affection, and few are competent to prescribe remedial or prophylactic measures. A careful study of this volume will prove of lasting benefit to every one, whether professional or belonging to the laiety. The very complete biography appended will prove of benefit to any one who desires to make a study of the literature of the subject.

LESIONS OF THE VAGINA AND PELVIC FLOOR, with Special Reference to Uterine and Vaginal Prolapse. By B. E. HADRA, M.D., Austin, Texas. 329 pages, 83 illustrations. Philadelphia: Records, McMullen & Co. 1888. Cloth, price $1.75.

A reprint of a series of valuable articles as they appeared in *The Medical Register* during 1887, with a good index and a scholarly appendix of recent literature. The best and newest material to be found has been used to show the causes, progress, symptoms and treatment of all gynecological injuries of the vagina and pelvic floor which are in any way related to such malpositions of the uro-genital system as are called prolapse.

MANUAL FOR BUILDING AND LOAN ASSOCIATIONS. By HENRY S. ROSENTHAL. 256 pages. Cincinnati: Robert Clarke & Co. 1888. Cloth, price $1.50.

That Building and Loan Associations are beneficial is demonstrated by the fact that they are being so generally organized throughout the country. This rapid development of these associations has given rise to a demand for specific information in reference to proper methods for organizing and conducting these institutions, and it was to meet this want that the book before us was prepared.

It embraces The Origin and History of Coöperative Societies; Objects and Benefits of Building Associations; Plans and Methods of Organizing and Conducting them; Legislation; Constitution and By-Laws; Forms and Description of Books, Blanks and Papers; Interest and Dividend Tables; and a Comprehensive Variety of Practical and Useful information and Suggestions. The author in his preface says: "The greatest care has been exercised to make all statements accurate and practical. The facts, conclusions, and suggestions given are based upon legal enactments, judicial decisions, and approved practice.

It has been the purpose to make the book *simple* and *comprehensive*. The building association is preëminently an institution of the common people and this book is intended for their use. The effort has been to include all the information of a general and specific character which is necessary to enable intelligent working-people in any community to organize and conduct a successful association."

The work covers the whole ground and all interested in Building and Loan Companies should procure a copy.

KNOWLEDGE FOR THE MILLIONS. The fourth volume of Alden's Manifold Cyclopedia contains 122 illustrations, and extends from Baptism to

Bilberry—637 pages, large type, handsome cloth binding, for 50 cents, or in neat half Morocco binding for 65 cents!

The great merit of the Cyclopedia is its adaptation to practical use; giving under each proper head the information most likely to be needed, and in concise, easily available form. Careful examination impresses one with its accuracy, as well as the remarkable fullness of its information. For actual use it abundantly answers the needs of all save those whose pursuits require exhaustive study of certain subjects. The combination of Unabridged Dictionary and Cyclopedia is a great convenience. Whoever wants a Cyclopedia will do well to order a least a specimen volume, which may be returned if not wanted. John B. Alden, publisher, 393 Pearl St., New York, or 218 Clark St., Chicago.

A new edition of the UNITED STATES DISPENSATORY. J. B. Lippincott Company take pleasure in announcing that a new edition of the United States Dispensatory is now being bound, and will be ready in a few days. The revision has been thorough, and not merely the addition of a supplement. More than one-third of the book, or nearly eight hundred pages, is entirely new matter, while the whole work has been most carefully rewritten. The National Formulary has been incorporated.

BOOKS RECEIVED.

A Manual of Pharmacy and Pharmaceutical Chemistry, by Chas. F. Heebner, Ph. G. New York: Published by the author.

[Our readers who desire any of the books reviewed in these columns, or any other works issued by the publishers, can order through us.]

Our Aftermath.

MARRIED.—At Kent, Ohio, Wednesday, October 24th, Dr. W. W. Reed and Miss Minnie Musser, both of Kent. The JOURNAL extends congratulations.

RHEUMATISM SPECIFIC (?)—The latest cure for rheumatism, according to a Georgia doctor, is to purchase a Mexican hairless dog and make the animal sleep so that the feet of the sufferer can touch the dog's body. It possesses the merit of novelty at any rate.

[Some one must have a corner on hairless dorgs.]

THE WATER DRUNK BY SOME PARISIANS.—During the past year the following dead animals were fished out of the Seine within the city walls: 2,021 dogs, 977 cats, 2,257 rats, 507 chickens and ducks, 3,066 kilos of butchers' refuse, 210 rabbits or hares, 10 sheep, 2 colts, 71 pigs, 49 geese and turkeys. 10 calves and goats, 3 monkeys, 1 snake, 2 squirrels, 3 porcupines, 1 parrot, 609 assorted birds, 3 foxes, 130 pigeons and partridges, 3 hedgehogs, 8 peacocks, and 1 seal. This is, perhaps, barely meat enough for substantial broth, but too much for plain drink.

Inherited Deficiency of a Tooth.—Dr. Cryer says, that he has, among his patients, members of the same family, representing five generations, each lacking the left lower lateral incisor tooth. An interesting feature of this remarkable instance of heredity is that one of the members of the same family has a supernumerary lower incisor.—*Med. Times.*

Intrauterine Dentition.—In the *Boletin Clinico*, of Lerida, Señor Lorens mentions a case of intrauterine dentition. He recently attended a woman in humble circumstances, in Barcelona, during a premature confinement at six months. The child had already cut the four incisors and the two lower canines. Had the woman gone her full time, the dentition would have probably been much further advanced.—*Lancet.*

Taking the Chances.—"I w-want two g-grains of q-quinine an' four o-ounces of w-whisky," shivered a man with malaria to the drug clerk, "an' I'll take it n-now."

"Isn't it rather a small dose?" suggested the clerk. "You seem to have got it bad."

"I d-don't know but w-what it is. M-make it e-eight ounces of w-whisky, an' I'll run the risk."—*American Druggist.*

A Mesmeric Plant.—A plant grows in Mixteca, Mexico, which the natives call the "herb of prophecy." A dose of it produces sleep similar in all respects to the hypnotic state. The subject answers with closed eyes questions that are put to him, and is completely insensible. The pathologic state brings with it a sort of prophetic gift and double sight. Furthermore, he loses his will, and is completely under the control of another. On returning to himself he remembers nothing of what he has done.—*Boston Journal.*

Fresh Air and Light.—Investigatien shows the great difference in the mortality between those whose calling necessitates an out-door life and those who are necessarily confined in-doors. Much damage is brought about by vitiated air, and the damage is not confined to any one set of organs; all seem to be affected, but, of course, the organs of respiration are mostly endangered. Much trouble also arises from the bad lighting of factories and workshops. A little common sense and proper hygienic instruction would save many lives and make stronger men and women. Everything should be done to improve the ventilating and lighting of factories and workshops, also to endeavor to arrange so that draughts of air should come from certain quarters, thereby carrying the dust and particles away from the employes towards dust collectors. By the adoption of these means many risks caused by the inhalation of injurious materials may be avoided.—*Report Ohio State Board of Health.*

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"A word fitly spoken is like apples of gold."—SOLOMON.

LOWER DENTURES.

BY DR. L. P. HASKELL, CHICAGO.

WERE it not for lower dentures, full or partial, the task of the prosthetic dentist would be a far more pleasant one.

From the very nature of the case, it is not to be expected that an average lower denture can be worn with as little discomfort as an upper one. The latter covers a broad surface and is held in place by atmospheric pressure. The average lower simply sets upon a narrow ridge, often of thickened membrane, and generally more sensitive than the upper, with rarely if ever any adhesion, and if of rubber, is easily moved by the tongue and lips.

For some reasons (and I wish some one would inform me why) there is usually more absorption of the inferior than of the superior ridge, and that, too, when no plate has been worn, as is often witnessed, where the posterior teeth have been extracted for many years.

I have for a long time advised and made use of heavier plates than rubber on the lower jaw, for the purpose of keeping the denture from displacement, and for this purpose have made use of the cast metal plates, believing they were better than anything else. But I am forced to the conclusion that they cause additional absorption, which increases the patient's difficulties. And yet I have found little trouble with the continuous gum dentures heavy though they are.

There is often a supersensitiveness of the membrane arising from a disturbed condition of the stomach and nervous system. I have had several marked cases of this. One case was that of a gentleman, whose business and sedentary habits taxed his energies, and for whom I had made an upper and lower denture. The upper occasioned him no trouble, except when the lower was out of the mouth, and then he would nauseate immediately; the lower one was constantly irritating. I made his temporary of rubber then a permanent of continuous gum. This I was constantly altering to relieve irritation, till I found it necessary to make a new plate; this I made of Watt's metal; the same trouble continued for a year or more. His wife finally prevailed upon him to take a vacation, and he was absent two weeks at the seashore. When he returned he told me the trouble had all ceased, but after attending to business again, he began his calls for relief. After a time I made him the third set, but just at this time his wife persuaded him to go West and remain for several months. Upon his return he told me that although he had worn his old plate during his absence, he scarcely realized he had teeth in his mouth. Soon after this he sold out his business and has lived out-doors much of the time for two years, but has no more trouble with the lower plate.

Of course when there is a deep ridge, all trouble is avoided, but I find of late years these are rare, more so than in former years, but why I cannot tell.

Very much depends upon an exact articulation. It is often the case that there is undue pressure upon the second molar, which will cause displacement and irritation of the membrane, relief for which, of course, is in grinding.

There is a class of cases where, in full sets, the space to be occupied in front is very wide between the alveolar borders, and yet at the extremities there is scarcely room for more than the first molar. In these cases there is a constant tendency to crowding forward of the plates. It is owing to unduly short rami. My attention has recently been called to this shortness of the rami by Dr. Talbot, in his investigations upon the etiology of irregularities. Sometimes I have found, after a few years' wear, the lower plate has been forced forward so that the teeth closed outside of the upper set, and the gum had been injured. Whenever this occurs it is a source of trouble to dentist and patient. The only thing to do is to make a new set.

As a rule, full lower dentures are preferable to partials, as then the pressure is distributed over the whole jaw. Still, I do not advise the extraction of the anterior teeth if sound and firm.

In making partial lower dentures, everything depends upon a perfect fit, more so than in an upper, and yet many of these cases are very difficult to secure impressions of. And this difficulty makes it all the more necessary to take the impression in plaster. Of course it often breaks and into many pieces sometimes, but they all go together and the result is a perfect impression not otherwise attainable.

If any one will inform me how to make lower dentures so they will occasion no more trouble than upper ones, I will willingly pay for the information.

CONTINUOUS GUM DENTURES.

BY W. H. MILLER, D.D.S., CANTON, O.

Continuous gum artificial dentures have at all times been regarded as the ideal style for the making of artificial teeth, as the only method which would at once fill the requirements of strength, adaptability, and capacity for producing artistic results. The only, or rather the great hinderance to the general use of continuous gum has been that it was impossible to make it so that it could be offered to our patients at a price that would compete with the cheaper plates of rubber with the sectional block teeth. The fact that little or nothing in the way of artistic taste could be displayed by the use of sectional block teeth, has not been denied, but has been asserted over and over again, and textbooks with one accord, place continuous gum work at the top of the list, all others being regarded as good only as they compare favorably with this style of work. Yet in spite of this fact, sectional block teeth and rubber plates, *because of their low price*, have practically pushed this *ideal* work from the field, have tended to drag mechanical dentistry to the low plane where it now is, and where little but of the "mechanical" is called for, or if called for, could be exercised. The operative department has been forging ahead and the gap between it and the mechanical has been ever widening, and to the discredit of the profession. A method which I am practicing and which has been and is successful, and which will tend to close the gap between the two departments of the profession, is as follows:

Make a die and counter-die of the gum portion of the model as far around the arch as may be necessary, to include bicuspids. Strike up a plate of platina wide enough to cover the gum and alveolar ridge, on this set up continuous gum teeth, back, solder, put on body and enamel in the usual way and fuse. You now have a block of the eight anterior teeth that are strong, just suited to the case, the contour and thickness of the gum is just right, and your teeth have just the arrangement that you chose to have, they are all that you as an artist have seen fit, or shown the ability to display. You have had no joints to grind, no "dark joints" to worry you. This block is now set on the model in the articulator, the remaining teeth set up, the plate waxed up, invested, vulcanized and finished in the usual way. You now have an artificial denture that combines the *highest possible style of art at the lowest possible price.* You have something that will satisfy your patients and be a credit to yourself, and that you can offer to your patients at a price that will compete with the ordinary "store teeth."

The cost for the material entering into a plate made as described above is not materially greater than the expense of the material entering into the construction of a set of sectional block teeth on a rubber plate, while but little more labor is necessary.

When one sees the result of this work and knows when he takes a case that its final result will be what he desires it shall be, and that it will not depend on the selection of something "that's good enough," he can approach a case for the most critical and know that he will be able to meet the requirements. His own gratification in being able to meet the wants of his patient, and the knowledge that he is able to produce good results uniformly and at a low cost, will be so great, that having once adopted this plan it is not likely that he will ever abandon it.

LEAD ROOTS ON TEETH FOR IMPLANTING.

BY A. BERRY, D.D.S., CINCINNATI, O.

Not aware of any attempt to obtain teeth free from danger of communicating syphilitic and other diseases, I have spent considerable time in study and experiments to get a substitute for natural teeth for implantation.

Probably porcelain teeth with roots of porcelain, wood, tin, or silver would be retained in place if skillfully inserted. But as lead is generally tolerated in the body without trouble, unless impinging on vital parts, it is, no doubt, the best material for roots of teeth for implanting.

The roots of continuous gum teeth reduced in size, with notches like the original, were enveloped in beeswax, invested in plaster and sand, boiled to remove the wax, heated to about three hundred degrees, and moulten lead poured in to fill the spaces. Plain plate teeth were used by putting silver backs on them, on which were placed strong stakes of silver nearly as long as the roots were to be, with notches in them to hold in the lead, which is attached by the same process as for continuous gum roots.

If the lead fails to flow well about the necks of the teeth, or on the silver backs, they can be reinvested in plaster, slightly heated, and the parts needed readily supplied with the metals used, with a soldering iron, to hold teeth on rubber plates.

The roots are to be filed and reduced to the required size, and they, as well as the sockets to receive them, should be perfectly round and of equal diameter in their entire length. The roots may be gauged to the size of the sockets to fit very closely.

A few days after these roots were completed on examining a stray number of the *Cosmos*, December, 1887, page 801, I learned that Dr. Harris, Grass Valley, California, invented and had implanted a porcelain tooth with a root of lead, and the case was reported to be doing well.

A CASE OF MORE THAN ORDINARY INTEREST.

BY DR. G. A. MILLS, HARTFORD, CONN.

During a late professional visit to Washington, D. C., I was solicited by a dentist to take charge of a case that had given him much anxiety. An appointment was made for a consultation with the dentist, the patient's husband, and the family physician (Dr. Hazen). The consultation proved that the patient had been suffering excessively for several months from a located distress at times upon the left side of the lower jaw, at others the right side of the upper jaw, frequently producing extreme pain throughout the entire soft tissues of the face, making it distressing even in washing the face, or in using the tooth-brush. The dentist, hoping to find relief, first had extracted a sound right superior molar, not finding any cessation of the suffering a lower left bicuspid was removed, for in these teeth seemed to be the seat of the pain. This treatment was coincided in by the counsel of both the physician and dentist, but it brought no relief, rather aggravating the case. I found a lady, age about forty with a quite well-balanced temperament, between the nervous and lymphatic; her face indicated a decided expression of unrest, a good deal pinched, dry and parchment like, very sensitive to the touch, particularly so about the lips, as I attempted to part them for an examination of the mouth. I found the mucous membrane of the mouth and the gum tissue with a pale, shiny, and quite transparent appearance, otherwise the general condition of the health of both the teeth and mouth, quite above the average. The patient was in a hyper-sensitive condition, bodily and mentally, was restless at night, being able to obtain but little sleep and that intermittently; and very fastidious in her choice of food.

I diagnosticated the case, one of general hyperæsthesia with a definite local expression. I gave the patient positive hope of relief. Dr. Hazen expressing himself as baffled the case was cheerfully put into my hands. I first dressed the entire mouth with a saturated solution of salicylic acid, alternating with a dressing of tannin and glycerine, continuing both of these each day until the final treatment. For a tonic I gave six grains daily of sulphate of cinchonidia, divided into two doses. I prescribed hot baths before retiring and ordered a generous living with little variety. The third night the patient slept soundly for the first time in several months; the patient manifested improvement rapidly, and in eleven days was dismissed, well. The query may arise, what was the exciting cause, but I think my treatment will suggest it. If not, I say it was probably what is termed a *change of life.*

DISINTEGRATION AT THE CERVICAL BORDER.*

BY L. P. BETHEL, D.D.S., TOLEDO, O.

It is a fact well known to most, if not all of the profession, that failures of proximal fillings, are, in the majority of cases, due to disintegration at the cervical border. Much has already been said and written upon this subject and many theories advanced. Theories founded upon good judgment, and of such a character as to satisfactorily explain, at times, the predisposing causes of disintegration at the cervical border of proximal fillings. Yet, no one theory is applicable in all cases, for the circumstances are so various. There are failures, at times, when every effort has been put forth to make a perfect filling, and all care maintained to avoid that imperfect manipulation or practice that in any way is liable to become a barrier to the preservation of the tooth.

Among the more important theories advanced are those of imperfect preparation of cavities, imperfect manipulation of the filling material at the cervical wall, the injudicious use of the mallet, particularly the hand-mallet, the imperfect finishing of fillings at the cervical borders, and others. It cannot truthfully be denied that, if a frail wall is left at the cervical border, or in fact any defective manipulation as above stated, it becomes a predisposing cause to the destructive influence of decay producing agents, yet, with all due care in these and other things we are often unable to satisfactorily explain the cause of disintegration.

From all accounts, more trouble of this kind has been experienced since amalgams and cohesive golds have been so generally adopted as filling materials, and this has led to the inquiry if attending circumstances may not be the cause of a physiological action, that, *at times*, becomes the predisposing cause of decay at the cervical border, namely, *absorption.*

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* Read before the Ohio State Dental Society, Cincinnati, October 16, 1888.

These failures occur mostly where the decay has burrowed high on the tooth, and especially where the gum has receded. The cervical border in these cases is formed where the enamel is often thin and defective, or extends quite into the cement substance overlapping the enamel.

Dr. Black* has stated that "much of the cementum of man, especially about the necks of the teeth, when so stained as to show them clearly, seems almost as if made up of fibers." And also that "these are the principal fibers of the peridental membrane included in the cementum in its growth, and furnish the means of making a firm hold of the peridental membrane upon the root of the tooth. They are white, connective-tissue fibers, the ends of which are included in the matrix of the cementum and in the most part calcified with it. They are in all respects like the residual fibers of bone and serve a similar purpose."

Cementum is analagous to bone in composition and density. Dentine differs from cement, practically, in that it contains about 5% more phosphate of lime which renders it harder as well as reduces the proportion of organic matter. Enamel is much harder and denser than either, and thus less easily penetrated. Having briefly considered the character of the substances forming the cervical wall in this location, let us turn our attention now to the filling materials.

It seems to be difficult to get an amalgam that will not change its shape after insertion in the cavity. Of course manipulation has more or less to do with this change, but we will not consider that point here. As inserted, amalgams seem generally to either contract or expand, more or less, upon hardening. As a result of contraction there is a pulling away of the material from the walls of the cavity, and although the breach be small, the decay producing agents may find a lodging place here, and their destructive influence is manifested. On the other hand, expansion of the amalgam must cause lateral pressure against the walls of the cavity, and this continued pressure may become an

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irritant. Cohesive gold, when heated, becomes harsh and unyielding. When malleted against the walls of the cavity, especially in hurried manipulation, it is liable to form an uneven surface and when solidly wedged in this position may become a slight irritant, by means of pressure.

Nature in both cases will then be called upon to take some course of action. First, we may reason that she will relieve the pressure and this perhaps by absorption. Dr. Black* states that "the clinical history of cases seems to show that a moderate degree of irritation or inflammatory action may hasten, or even be the condition of the beginning of many of the absorptions." Dr. Coleman says:† "Pressure if continued upon the soft tissues, will produce absorption, and even the bony structure will after a time yield to the same cause."

In case absorption does ensue, where will it first manifest itself? Naturally at the most vulnerable point, in this case the cervical border, as it contains more organic matter, and is less dense than the enamel. If the absorptive process begins it may, and often does, proceed quite beyond just enough to relieve the pressure, and in this case may cause a breach.

It is true that Nature reacts in cases of absorption and fills the breach with cementum unless some intervening substance interferes. If the absorptive process has been carried to such an extent that the oral fluids are admitted into the breach, then Nature is called upon to protect herself from these and makes the deposit short of the breach and thus we get a condition that greatly favors disintegration and caries.

On the other hand we notice few failures at the cervical border where non-cohesive gold, tin, or tin-and-gold, are judiciously used as a filling material. If the absorptive theory, as here presented, prove true, then we may conclude that fewer failures occur from these materials because they are soft and yielding, conforming readily to the walls of the cavity and on this account do not cause pressure after insertion.

Unfortunately we have not had the materials at hand to make original investigation in this direction and what we have said in this paper is written upon a supposition, with the hopes that it may be the means of bringing forth truth in the discussion.

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* *Dental Review.* † Coleman's Pathology.

DISEASES OF THE MAXILLARY SINUS.*

BY DR. LOUIS JORDAN, DELPHI, IND.

It was not until the knowledge of anatomy had made considerable progress that the existence of this cavity was known. Casserius, an anatomist in the latter part of the sixteenth century and early part of the seventeenth, is said to have first discovered it, but no correct description was given until about the middle of the latter. The credit of a correct description belongs to Nathanial Highmore; hence its name, "Antrum Highmorianum."

This cavity is subject to some of the most formidable and dangerous diseases the medical or surgical practitioner is ever called upon to treat. Diseases are sometimes here met with over which neither the surgeon nor physican can exercise any control, and the progress of which only death will arrest. A case of this kind came under my observation sometime about the year 1853 or 1854. An old gentleman, a farmer, aged along in the seventies, had been afflicted for many years with ficdolerean, and getting no relief through medical aid as yet, came to consult me. I told him I would try a remedy I saw, but was doubtful of its doing him any good. It was a preparation of salammoniac. It had but little effect, and he lingered for two or three years more, afflicted with most excruciating pain, until death relieved him.

It is not all the diseases of antrum maxillare that are of so dangerous a character; some are very simple and easily cured. Those that are recorded as the least dangerous, and would yield most readily to treatment in the earlier stages of the disease, often, if neglected or improperly treated, assume a new and aggravated form, and bid defiance to the skill of the physician and surgeon.

There are those which are considered as the most dangerous from their incipiency that by timely and judicious employment of suitable remedies may be radically removed.

The form which the disease puts on is determined by the state of the constitution or the sequence of some disease badly treated. The cause which in one person would give rise to a simple inflammation of the lining membrane or mucus engorgement of the sinus, would in another produce an ill-conditioned ulcer, fungous hematodes or osteo-sarcoma. In a large majority of cases of disease of the maxillary sinus the danger to be apprehended results more from neglect than any necessarily fatal character of the malady.

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* Paper read at the Indiana State Dental Association.

In forming a prognosis, the circumstances to be considered are the state of the constitutional health, the progress made by the affection, and the nature of the injury inflicted by it upon the surrounding tissues. In young or middle-aged persons of good constitutions a morbid action may exist in the antrum for years without exhibiting the least, if any, alarming symptom. In other cases, where the constitution is less healthy, it may rapidly change into a form of disease so very malignant as to endanger the life of the patient. The qualities of the secretions are changed, and a very nauseating and fœtid odor is thrown out. In many instances it is almost insufferable, and when prevented from escaping through the natural channel into the nose, they discharge themselves through one formed by art or break through the cheek, alveolar border or palatine arch. It may exist for weeks or months before its presence is suspected.

Man is not the only animal affected with disease of the antrum maxillare. Dr. William Cook says, a disease prevailed among cattle which caused them to go mad, and it was believed they were bitten by a mad dog. Having a desire to ascertain the seat and nature of the malady, he examined the head of one that died of it. He first directed his research to the brain, but no abnormal appearances were observable there, he then laid open the superior maxillary cavity and found it filled with a fœtid matter.

The extremity of the root of a tooth may perforate the sinus causing inflammation of the lining membrane, and when matter is thus formed in the alveolus of the superior molars, instead of forcing its way through the socket of the tooth it will escape into that cavity, mixing with its secretions, and pass out through the nasal opening.

Inflammation and ulceration of the pituitary membrane of the nose, may extend themselves to the maxillary sinus, but it is seldom that both are affected at the same time.

Diseases of the nasal fossæ, as catarrhal affections, may occasionally give rise to the morbid condition of the maxillary sinus. Concealed as it is, within the essential part of the superior maxilla, and being connected with the nose by a very small opening, it would seem beyond the reach of most causes to which diseases of the nasal fossæ are attributed.

The opening of this cavity may sometimes be closed by a disease in the nose, and, if so, it is followed by a mucus engorgement of the sinus, inflammation of its lining membrane, and distention of its osseous walls, and sometimes by a more complicated disease, as polypus.

The pain occasioned by diseased teeth is often very severe, and the inflammation excited by them in the alveoli dental periostea and gums frequently extends to the whole of one side of the face. Some writers attribute these affections to the morbid condition of the teeth and alveoli, others to other causes, such as constitutional diseases, blows on the face, and exposure to cold. The pituitary membrane of the antrum maxillare is shielded from the irritating agents to which it is exposed in the nasal fossæ and other cavities. It would seldom be affected with inflammation were it not that it is frequently acted upon by morbid-excitants, the influence of which seldom extends beyond the alveolar border and face. Febrile and gastric affections, eruptive diseases, as measles, and small-pox, syphilis, excessive use of mercurial medicines, scorbutic or scrofulous diathesis of the general system, and anything that will enervate the vital powers of the body, increases its irritability.

Boyer describes the symptoms as a very severe fixed and deep-seated pain under the cheek, extending from the alveolar border to the lower part of the orbit, local heat, pulsation and sometimes fever. Deschamps distinguishes the symptoms from other affections of the cavity by a dull, heavy pain in the region of it, which, he says, becomes sharp, and extends from the alveolar to the frontal sinus. He tells us this malady cannot be confounded with any other, if there is no external visible cause. Suppuration and ulceration have peculiar signs which cannot be confounded with those of inflammation.

IN PRACTICE.

In the latter part of the summer of 1862 A. Anderson, a potter by trade, residing in our town (Delphi), was attacked by a severe pain in the antrum, extending, as Boyer describes it, from the alveolar border to the orbit. He applied to his physician, Dr. Thomas, who thought that the extraction of the first superior left molar would relieve him, but, in attempting it, failed. He then sent the patient to me, but I failed. The pain grew so severe as to almost distract him. I advised him to go to Lafayette and consult Dr. Moore, and, at his request, accompanied him. Dr. Moore tried to extract it, but failed. He then extracted the wisdom tooth, thinking it would relieve him. It was with difficulty he extracted it, and no relief was given. He then perforated the antrum with a drill, but no pus followed. The pain ceased, and we returned home. I kept a pledget of cotton dipped in creosote in the orifice for several weeks, renewing it daily. In the meantime I had occasion to go east, and in my absence he neglected it. When I returned I found the orifice closed, and the pain as severe as at first. I perforated it again, and applied the cotton pellets with creosote, and, continuing it for six or eight weeks, succeeded in effecting a cure. I will just here say that he had no decayed teeth in either jaw.

In the spring of 1871 Dr. John Richardson (now dead), of Delphi, had a scrofulous case that baffled him very much. A young man of seventeen or eighteen years of age was attacked with a severe pain in the frontal sinus. The doctor brough him to my office to have me examine his teeth. I found them but little decayed, if any. After a consultation we agreed, the pain being on the right side, to perforate the sinus near the front and lateral incisors in two places, which I did, applying carbolic acid on a pellet of cotton in the orifices, renewing it every day. This I continued for about two months, the doctor at the same time treating him. The pain ceased, but the doctor continued his treatment until his patient fully recovered. He is at this time in good health, and while his teeth are not in the best condition, the roots are filled, and he has not experienced any pain in the sinus from the time I treated it to this.

Another case and I am done. A minister of the Gospel in Delphi having the superior left lateral incisor decayed wished to have it filled. The nerve being dead, I proceeded to treat preparatory to filling the fang and tooth. By the time I was ready to fill it, he accidentally broke it off. I then filled the extremity of the fang, leaving it for some time before inserting a tooth, to see if it was properly filled. I then inserted a Bonwill tooth. After wearing it some time he broke it. I put on another, and after wearing it for some time an abscess formed near the front tooth. I attempted to heal it, and failed. I then advised him to have it extracted, but he refused. I continued treating it, but had no success in getting it healed. I at length succeeded in extracting it, but found no inflammation in the periosteum. I treated with carbolic acid for some time, and it seemed to grow worse instead of better. A physician who knew of the case, examining his eyes, looked at the abscess, and, probing it, found the process around the front incisor exfoliated. I then commenced cutting the exfoliation away, syringing once a day with listerine. Some ten or more years ago he had the lachrymal ducts operated on, since which time matter would form in the corner of the eye, and the tear would flow over instead of through the duct. The abscess appeared to follow toward the apex of the tooth directly toward the duct. The disease has been there for a great while, and is not altogether healed at this date.

DENTISTRY AS RELATED TO MEDICINE.*

BY GEORGE W. WILLIAMS, RICHMOND, IND.

The elevation of any particular class of men is the result of a demand on the part of the people. The highest attainments of any fraternity are the result of enlarged conception on the part of its representatives.

Medicine is the art and science of preventing, curing or alleviating the diseases of the human body. In the beginning it was probably an empirical occupation, and it remains so yet to a considerable extent. But as it grew and developed the study and application became more necessary for the practitioner, and the fact was recognized that each one could cultivate only a part of the field. Thus it is that medicine takes its highest form in specialism to-day. Specialists in medicine are those who make a special study of the diseases of certain parts of the body and confine their practice to these diseases. Such practice is called a "specialty" in medicine, and this brings us to ask, is dentistry a specialty?

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* Paper read at the Indiana State Dental Society.

Dentistry is the art and science of preventing, curing and alleviating the diseases of the teeth, and, as an ever present necessity, is now practiced all over the civilized world.

Within the last few years a great deal has been written and said as to whether dentistry is a specialty of medicine, and as such, should dentists receive recognition by medical men and medical associations? The agitation of this subject and the discussions in the past were prompted, no doubt, not so much by a desire to improve our practice and knowledge as by a desire to acquire a greater distinction and position professionally. The highest expressions in medicine come from its delegated bodies of medical men, taught by medical schools and accepted by mankind. *They* are all required, before they can be recognized as "regular," to possess themselves of that amount of knowledge which is, or ought to be, implied by the degree of "Doctor of Medicine." This, then, is the standard to which dental colleges must attain in their course of instruction to entitle their graduates to be recognized by their sister professions. But if we are to judge from the spirit and expressions of some of the best and renowned men in the dental profession, any former recognition from medical societies is not now desired by the dental profession, a feeling being prevalent that in maintaining an independent organization, we can be more effective than if we were merged into medical organizations and thereby lose the prestage we possess; that we have become numerous and respectable, and have the very best men of advanced thought and science, professionally, in our ranks and the confidence of the world in our special calling, is enough; that the organization of dentists is too firmly fixed to be broken up and disbanded by merging into other organizations; and that in the natural order and fitness of things, dentistry, as practiced to-day, is a branch of medicine in itself, and accepted by mankind.

Fifty years ago there were few facilities for dental education anywhere, but in the interval it has established its own aids without help from medicine; it founded schools and educated and sent out laborers. The education was practical and the work was practical, and now the field being supplied more care to the education of the coming dentist can be given, making its precepts broader and more comprehensive. Dentistry has made itself and we have become dentists and specialists by our own efforts and in a practical way, and I doubt if the standard of dentistry would be very much higher, or the practice very much better than it is, if every dentist was a graduate in medicine. I believe medical men are very kindly disposed toward us, although in the beginning they may have held us somewhat in derision, which was natural, but we have shown our worth and ability, they have given us credit, until we are now recognized for all we are worth.

Gentlemen, let me say that as a profession dentistry has made greater progress in the last twenty-five years than medicine. It seems entirely safe then to intrust the future of this science and art in our hands. Education, either by precept or bitter experience, will drive out the incompetent and inefficient, which will be the greater elevation of dentistry, both in theory and in practice, and when this work shall have been accomplished, dentists, as a whole, will be men of general and professional education; men who have taken a medical degree and supplemented it by special training for dental practice.

THE TREATMENT AND FILLING OF TEETH IN WHICH THE PULP IS FOUND EXPOSED OR DEVITALIZED.*

BY FRANK OVERHOLSER, D.D.S., LOGANSPORT, IND.

Under this class of operations we contend with greater obstacles than probably any other, that the dentist is called upon to perform, and upon the results of such operations depend very largely our success in dentistry, since by saving a tooth or root of this class we obviate the necessity of wearing a plate, and fulfill our highest mission—that of saving the natural teeth.

Under the head of treatment and filling of teeth, in which the pulp is found exposed (denuded) or devitalized, I might give something regarding the capping of pulps, but shall leave that field to some one more enthusiastic upon the operation of pulp capping. I shall devote my time particularly to teeth in which the pulp is found devitalized, or where we have decided to devitalize it. It will be necessary, however, to give some idea of when we should decide on such a course.

The age of the patient is the greatest consideration, since in the young patient we find the pulp so near the surface that a small cavity may expose it, when the same a few years later would not endanger it in the least.

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* Paper read at the Indiana State Dental Society.

Such pulps, when found in a healthy condition are not usually difficult to preserve by the means of capping with some non-irritating cement, or gutta-percha, until a few years later the dentine will have deposited sufficiently to protect the pulp, when a permanent filling may be introduced.

After the age of maturity the less risk we take on exposed or diseased pulps the fewer are the failures to follow. After the tooth has matured there is less use for the pulp, and the less recuperative power does it seem to possess. Hence a pulp that I might endeavor to save in the tooth of a child, I would destroy in that of the adult as the best means of success.

To remove at the proper time is far more advantageous than to experiment with a diseased and dying pulp, probably to the detriment of the surrounding parts and discoloration of the teeth before the mischief is discovered.

Although healthy pulps are sometimes sacrificed by the careless operator, there is probably more harm done by the operator who thinks it is his conscientious duty to save all the exposed pulps that come under his observation.

When a matured tooth that has ached is presented for filling, and the cause is from exposure of the pulp, the safest course is to devitalize the pulp and fill from root to crown. The exceptions to the rule are too rare for consideration at this point. Neither is pain a criterion, for some times teeth seem to flourish with a pulp protruding from its chamber, while other teeth seem to ache when the pulp is not exposed in the least. But, when a matured tooth has ached from exposure, it is rarely safe to attempt its preservation by saving the diseased pulp.

When the pulp is exposed and has never ached, it is often still more uncertain. The means of devitalizing the pulp by application of arsenious acid is almost universally used, and it is probably the most satisfactory of our present methods. In proceeding to devitalize a pulp in a diseased and aching condition, the first step should be to relieve the pain for from one to twelve hours before making the application of nerve paste, thus lessening the pain very greatly. The pulp should be well uncovered before making the application.

Sandarac varnish seems to be the most used to retain the paste in the cavity, but the temporary stopping of gutta-percha serves the purpose more satisfactory, and is less likely to be followed by soreness as it hermetically seals the cavity. From twelve to twenty-four hours is generally sufficient to devitalize the pulp when the application is in free contact with the tissues. A longer time is sometimes necessary, but not generally advantageous. The pulp should be removed before any soreness is felt at the root.

The thorough removal of the pulp is of greatest importance, and should not be attempted through a cramped opening. The tooth should be cut away sufficiently to give direct access to the pulp chamber. It is seldom necessary to enlarge the canal, but the access to the canal should be free and direct as possible. A good soft broach is the safest means of removal, however, the woden point finds favor in the hands of many.

After the thorough removal of the pulp, as near as careful manipulation will permit, the root should be syringed out freely with water, wiped out with peroxide of hydrogen, dried with hot air syringe, then freely saturated with oil of eucalyptus, dipped in powdered iodoform, dry the cavity once more with hot air syringe and fill root canals with cement or gutta-percha. I find the use of Dawson's cement preferable, it can be mixed thick enough to handle, and can be easily worked into the canal before it sets. The gold or amalgam can now be introduced.

Under the head of teeth in which the pulp is found devitalized, the main difference is in the septic condition present. The cavity should be well opened to insure good access to the canals, after which it can be thoroughly disinfected by the use of bichloride of mercury, 1 to 500, it disinfects without giving off an odor of its own, sometimes misleading in aromatic preparations. The peroxide of hydrogen is useful in the same relation. The cavity should then be well formed and the napkins or dam placed in position, dry thoroughly with hot air syringe, saturate cavity and canals with oil of eucalyptus dipped in powdered iodoform, dry once more with hot air syringe, and fill as in first class of root filling.

The hot air syringe as a disinfectant and germicide is second to nothing in this class of cavities. The gold or amalgam can then be introduced. The tooth has been placed in a healthy condition and Nature is almost certain to accord.

CARE OF CHILDREN'S TEETH.*

BY DR. E. J. CHURCH, LAPORTE, IND.

Years ago the practitioner of dentistry paid but little heed to the care of children's teeth, the making of artificial dentures occupying his time, his ambition, his energy. All his skill was centered upon this one effort of his life—to produce something that would approximate to a perfect piece of art.

A change gradually took place. Prosthetic dentistry gave way before the efforts of those who had higher aims, a more noble ambition—an ambition to preserve the natural organs of mastication. A grand advance, truly, and one that has saved myriads of teeth for years of usefulness and comfort, and put to flight the demon of many an ache and pain.

The care of the teeth of our little ones is largely a labor of love; it certainly is not one of profit, in a pecuniary sense, and yet if we rise to a higher plane and estimate the profits from an enlarged and broader view of our duties as practitioners, it is profitable and pays big dividends.

What are we here for, anyhow? Merely for money-getting? Practicing deception upon the ignorant and credulous, relieving them of their hard-earned dollars without giving them an equivalent in the coin of the Union? To take the average advertisement of the profession one would think that the charlatan and pretender *was* abroad in the land by a large majority. We are here for a more noble purpose—that of alleviating the pains of suffering humanity. The little child, unable to care for itself, certainly ought to command our best efforts and receive our most tender care.

We ought to impress upon parents the absolute necessity of maintaining a constant condition of cleanliness, not only of the body, but of the teeth, those valuable organs that are beset by so many enemies.

It is up-hill work, it is true, to attempt to impress upon the average parent the necessity of keeping the teeth of their children clean. While they will take great pains and go to unlimited expense in providing rich and costly raiment for their children, they seem to ignore the care of their teeth, apparently thinking —if they do think of the matter at all—that the teeth can take care of themselves.

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* Read at the Indiana State Dental Association.

A lady remarked to me one day when the subject came up, "Why, Doctor, they have got to come out anyway, have'nt they? What's the use of fussing with them; let them alone, and when they ache pull them out, that's the best way." Of course I bowed to the superior intelligence manifested, and changed the subject, as I have found it unprofitable to attempt to sow seeds of knowledge upon ground so utterly unprepared for its reception.

A lady of more intelligence than the average, said to me on another occasion when the subject of taking care of children's teeth was being discussed: "Ah, Doctor, we are not all dentists, you must recollect; if we were, perhaps we might be able to do as you suggest."

The fact is, the average man and woman knows little about the care of the teeth, especially those of children, hence there is an indifference manifested that is really appalling. I often wonder, under the circumstances, how it is that practitioners are so faithful to their trusts, when so much ignorance, as stumbling blocks, is strewn in their way. One would suppose that the average practitioner would give up the attempt as hopeless, and would make up his mind that any lasting impression upon the great majority of parents was impossible. Yet it is a duty that we have to perform. We must keep at it, in season and out of season. A persistent and determined pounding away at the battlements of ignorance and indifference will in time produce some good results.

People having the charge of children, should be instructed how to keep their mouths sweet and clean.

As soon as the incisors appear through the gums, a daily brushing with a soft brush and clean soap is all that is necessary. When the child is old enough to sit at the table and eat the food provided for the rest of the family, then more care must be taken, and a vigorous brushing with a preparation of prepared chalk orris root and soap, with sufficient sugar and flavoring to be pleasant to the child, must be done every morning with a medium stiff brush, and a rule established and enforced, that no one can have breakfast until the teeth have been properly attended to.

The children should be impressed with the importance of attending to the teeth, if they wish to escape pain and many sleepless nights.

The parents, guardians or whoever it is, who have the supervision of children, should be thoroughly impressed with the absolute necessity of having the teeth of the little ones carefully examined by a dentist at least twice a year, and once every three months would be better. If upon an examination, there are any cavities, they should be filled with some quick-setting alloy, I say alloy because children are restive and cannot endure confinement in one position for any length of time, therefore gold or tin-foil is inadmissable.

The work must be done gently, carefully, quickly, and only a little at a time. The preparation of one cavity and the filling of it is all that ought to be expected of a little patient of three or four years of age. An attempt to do too much will often excite an antagonism in the child that no effort on the part of the parent or practitioner can overcome.

There are a class of cavities between the deciduous molars, dish-shaped, so shallow that it is impossible to retain alloy without considerable preparation, such cavities can be filled with some quick-setting cement, very few children can remain quiet long enough to do more than remove the decayed dentine, hence cement is the best material for the purpose. It is necessary to inform the parent or guardian that the cement in some mouths wastes away in time, and that it will be necessary to keep a close watch over the fillings, and as soon as they give any sign of shrinking below the walls of the cavity, it will be necessary to have them repaired, this can be done very readily without taking much time or worrying the child to any great extent.

The fewer the rules the easier will they be complied with, children do not like to be hampered by rules they cannot readily understand.

If they are thoroughly impressed with the knowledge that the care and attention they give their teeth each morning will save them from suffering pain, they will soon form the habit of cleanliness, and their mouths will be sweet and clean.

OHIO STATE DENTAL SOCIETY PROCEEDINGS.*

DISCUSSION OF DR. MAXWELL'S PAPER.

Dr. Taft: This paper impresses me as being a very good one. This is a subject upon which a great deal might be said. There is but little, if anything, in the paper that I would criticise especially. This might be said, perhaps, that the writer did not classify the different stages of this affection as closely as he might have done. But he certainly presented a very good resumé of the subject, and a good presentation of the varieties of the diseases that arise from this tissue. His mode of treatment also is good. There are, of course, other modes of treatment from which very good results have been obtained.

It is important in treating periostitis, to note all irritants, and the influence that each may have on the diseased tissue. There is, perhaps, none requiring more special attention than salivary calculus. This, in many instances, occasions so much irritation that restoration cannot be obtained while it is present.

His remarks about the removal of all foreign substances are very good. The dental surgeon or physician can do a great deal of good by cutting the bone in that way or even a soft tissue that is in that condition. Cut it with an instrument, with a bistoury, etc., the object is simply to remove diseased material.

Dr. Smith: I do not rise to discuss the question, but simply wish to state that there is one point, if I am correct, in the paper that I cannot quite agree with, and that is that we do not have pericementitis without the death of the pulp. The pulp becomes inflamed, and it is possible we may have pericementitis. When the pulp comes back to its normal state, the symptoms of pericementitis subside.

Dr. Maxwell: I think Dr. Smith misunderstood me, for that comes, as I said, from the poison escaping from the soughing pulp which causes the inflammation of the tissue. I do not think that you have ever found that sort of inflammation without gas being present.

Dr. Custer: There is one point that has not been touched upon and that is, that pericementitis is not always the result of a dead pulp. In my limited practice I have found that in nearly every case where there is pain there is a live pulp instead of a dead one. Now, if there is a continuity of tissue that pathological condition will spread and it will produce inflammation of the membrane in the apical territory. I would like the opinion of others on this point.

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* Dr. Maxwell's paper appeared in the November Journal.

Dr. Taft: I think Dr. Custer in his remarks mistakes in one respect; and that is in which the disease would take place at the end of the root. It is true that occasionally with a live pulp there will be inflammation of the periosteum, but it is not often —at least I have not found it so—and it is not always when the disease occurs that it is found at the end of the root. In almost every instance when there is inflammation at the end of the root, the pulp is dead. I do not now remember to have seen a single instance in which that affliction was found at the end of the root, that the pulp was not dead. But this affection may start from a diseased gum by violence upon a tooth, and then it involves all of the membrane, covering the root. It may extend to the end of the root, but in such a case it will be no more severe there than elsewhere, except possibly in a certain kind of violence. A blow upon the end of a tooth may, of course, bruise the membrane at the end of the root more than elsewhere, and inflammation arise. And such inflammation may be more marked there than elsewhere. Only local treatment in the main was referred to, but little was said on general treatment, and perhaps we do not enough appreciate the importance of general treatment, the local being that generally employed, and nearly all cases require local treatment. In many cases quinine will operate very well giving prompt relief.

Dr. Bell: As I understand it pericementitis is simply an inflammation of the periosteum, and that there are a great many ways by which that trouble is brought about. It is brought about more often by mechanical means than by the poisonous material escaping from the pulp. In one instance this trouble was brought about by holding a pencil. The trouble embraced four of the superior and inferior teeth. It has been brought about by carelessness on the part of the operator, allowing one tooth to remain unfinished. Systemic treatment for the trouble I do not believe is necessary except in very extreme cases. A great many times the cause is mistaken and teeth destroyed when it is entirely unnecessary.

DISCUSSION OF DR. BETHEL'S PAPER.

Dr. Smith: This is a subject of much importance to us, and it seems to me that the paper ought to receive some discussion. The failure of this operation at the cervical border depends very largely on the manipulation, it depends greatly on the failure in manipulation in making a close joint in the filling, and a great many times from the lack of finishing out the border. Dr. Bethel, if I understand him correctly, put the failure to a depression of the filling, and I understood him to say that you might have continuous pressure. You have no doubt pressure at that point in the manipulation of solids — gold or silver — and you might endanger the tissue and then follows the dissolving action of digestion. That idea has been set forth by Prof. Black, in referring to what he called erosion of the teeth. Why are teeth eroded, the surfaces removed, without the presence of the contamination from foreign matter, where teeth are thoroughly rubbed, yet we have this eroded surface, that has been spoken of by Dr. Black, arising from the marginal gum, from the stomach, and in that way dissolving the dentine. Whether he means after the filling has been introduced we have a continuous pressure, or whether the pressure is noticed at the time thereby impairing the tissue, and making it more readily acted on by the solvent.

Dr. Taft: This is an important practical question, many operators tell us that they have very frequently failed at this point and I presume nearly all, perhaps all operators have as many failures at this point as anywhere else. The question has frequently been asked why is this? Some give one reason, others another. There are certain things, however, that will be plain to every one bearing upon the question. In the first place the cervical borders in approximate fillings are so situated that foreign substances are liable to lodge and be retained till decomposition takes place. It is difficult to keep the proximal surfaces of the teeth free from offensive accumulations. It is frequently a very difficult matter to have the cervical borders well protected, and especially if the cavity extends well toward the root of the tooth. And then the formation of a cervical wall is attended with difficulty. It is a difficult point to properly form definitely and well. In many instances it is necessary to work by reflected light in operating upon these borders. The cervical borders of proximate cavities are more or less difficult of access in the different steps of the operation of filling; this accounts for some defective work and failures.

A thorough examination of proximate fillings, as they are usually presented, will reveal quite a variety of defects. In some cases it will be found that the form of the cervical wall or border is very defective in form; either the decay not all removed, the edge left irregular and rough, or sharp at the edge, so that in the introduction of the filling it has been fractured. In many cases there is a failure in the adaptation and consolidation of the filling, and so the cavity is not protected. And again it will be found that the cavity has not been sufficiently filled to protect the tooth; and further it is often found that the cavity is over-filled, and the material permitted to over-lap on the tooth outside of the cavity, thus affording a ready lodgment for destructive agents, by which decay is soon set up. The indications are to avoid these defects by careful and skillful manipulation in the operation of filling.

The filling and tooth should be so dressed that a free and smooth space is made between the necks of the teeth, that they may be easily kept clean. Sometimes the enamel and cementum fails to cover the dentine at the neck of the tooth; such points are very subject to decay; filling a cavity of decay in the vicinity of such an exposed point, though perfectly done, will in nowise prevent the attack of decay, this may be in contact with the filling, or it may be at a distance from it. A diseased gum-margin is often the occasion of decay, especially on the proximate surfaces of the teeth, but the cervical portion of the lingual and buccal teeth are affected in the same way. Now if these various points receive the attention that their importance demands and the treatment they should have, there will be less occasion for complaint about failures in proximate fillings.

Dr. Clancey: If the tooth-substance is cut away under the gum, in my experience the filling will last very much longer, and this trouble is not likely to occur. The difficulty of the operation, the time it takes to make it, the obscure position of the cervical border, and the side walls of the cavity, leaving an edge towards its neck has much to do with the failure of this work. The filling is not perfectly done, if it is perfectly done it is as perfectly finished at the cervical border as the upper portions of the tooth, which are easy to get at. I think we will have fewer failures if we cut away so that the lower part of the tooth at the cervical borders do not come close together, and if the gold is placed in properly, and the margins of the side walls of the cavity are covered, and if too much force is not used, the tissue will not be broken down, and I do not see why they should not last as long as in any other place. If it is necessary, take more time. I do not see the necessity of so many failures, as we hear about, and as I have had myself and have seen coming from the hands of other operators.

JOINT MEETING OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS.

[Reported for the Ohio Journal of Dental Science by "Mrs. M. W. J."]

(Continued from page 523.)

Dr. Frank Abbott read a paper on

THE ODONTOBLASTS IN THEIR RELATION TO DEVELOPING DENTINE.

This paper reviewed the "secretion" and "transformation" theories as applied to developing dentine which surpasses in delicacy and refinement of structure all others, the main mass being not cartilaginous but glue-yielding, infiltrated with lime salts, the only cells being the odontoblasts, protoplasmic bodies sending off shoots upward and downward to the papilla, only the outward layer of the pulp being concerned in forming dentine; the dentine cells are replaced by others, but the whole pulp is not transformed. He considered the theory advanced by Dr. Andrews, that only the pear-shaped odontoblasts are fibril bearing cells—untenable, as they may be seen projecting from every form of odontoblast. The observations of Bödecker and Heitzman show that odontoblasts split up into medullary or embryonal tissue corpuscles, the living matter remaining unaltered. Though formed in layers, by rows of odontoblasts dentine yet makes a continuous mass, being only exceptionally stratified. Dr. Abbott said that for a long time he upheld the secretion theory, but later he had adopted the transformation theory.

Dr. Sudduth contended that the hard tissues were the result of secretion rather than of transformation, through the deposition of lime salts, through the action of the odontoblasts in dentine, of the ameloblasts in enamel, of the osteoblasts in bone. He thought that Dr. Abbott made no distinction between the cortical and cancellous portions of bone, the former being undoubtedly a secreted layer; that he also ignored the nuclear structure of tissues, the forces of the cells depending on their position and the pressure of others. He had visited the laboratory of Heitzman and Bödecker but saw nothing from which he could draw the conclusions they had reached. If carefully stained, the nucleus can be clearly seen; the return of tissue to its embryonal condition.

Dr. Abbott said if we did not differ in opinion we would never learn anything. We can look at the same thing, with the same glass, and yet see and understand in a very different way. No two see alike, but a little good common sense is necessary. With high power, a reticulum full of little nuclei can be seen in every odontoblast, but this is only a provisional step in the formation of dentine. The odontoblasts themselves become dentine, the nucleus splitting up again and again, and the odontoblasts increasing in length. Dr. Abbott said that he had studied carious dentine very carefully for many years. After the débris had been taken out, the first layer of carious substance will be found soft and full of micro-organisms, micrococci, and lepthrix mainly. As we go deeper in, we will find that the micro-organisms penetrate only to a certain extent—the line of demarcation is very plainly drawn — we will find disorganized, broken-down tissue, perhaps 28 parts of organic matter and 15 parts of living matter, glue-giving basis substance, in an inflamed condition. Organisms do not cause decay, but they come there because it is decayed.

Dr. Sudduth said that no theory yet advanced explains the production of a cavity, except the germ theory of Dr. Miller; organisms producing a digestive ferment which breaks down tooth-substance. Nitric acid dissolves the lime salts leaving the perfect form of the tooth, the micro-organisms developing in the semi-decalcified dentine, the media in which they live; they in turn throw out lactic acid which breaks down the form of the tooth. The age of the decay gives the different colors seen.

Dr. Abbott, in reply, maintained that teeth do not decay by the dissolving out of lime salts. The first leathery dentine is full of organisms, but it gets a little harder and less devoid of lime salts, and still harder with still more lime salts and less organisms, but it is still broken down, though by something else. Whether or not micro-organisms are to blame for all this is of no importance; if the teeth are kept perfectly clean they will not decay, and yet we have organisms in the mouth as everywhere. They do not destroy us simply because conditions are not favorable. Whether the first lesion is due to acids from decomposing food, or from micro-organisms is indifferent. When the enamel is penetrated, the tissue beneath contains living tissue, this becoming irritated displaces the lime salts, which melting down through inflammatory processes form embryonal tissue—acids dissolve the lime salts and they are taken away—broken down and washed out.

Dr. Sudduth: The admission that the breaking down is due to micro-organisms is everything that is claimed. No putrefying mixture in which a tooth may be placed will produce a cavity—only one form of micro-organism will produce it.

Dr. Abbott replied that he had made no such admission.

Dr. Allport related the experiment of Bödecker, in which a tooth locked up tight—entirely protected from microbes—having arsenic placed in a cavity, the tubuli became enlarged, and there was an entire wasting away of the structure to the pulp. How was this broken down, unless through inflammation as stated by Dr. Abbott? The contents of the tubuli swelled, the broken down walls decomposed and produced acids, but there were no microbes. No reply was made to this on either side, and the subject was passed.

MATERIA MEDICA AND THERAPEUTICS.

Chairmen, Jno. C. Story, Southern; A. W. Harlan, American.

Dr. Story described a case in which very peculiar results followed hypodermic injection of cocaine in the gums (for extraction), accompanied by three swallows of brandy. The patient complained of a peculiar feeling of stiffening of the joints of the fingers, elbows and shoulders, and becoming alarmed left the chair. He became unconscious and remained so from 6 to 11 p.m. He then regained consciousness but passed "an awful night passing description." He suffered no pain, but his sensations were most peculiar. Various remedies were administered, as tartar emetic, salt water, strong coffee, etc. The next day, from his elbows to his wrists, was a solid mass of pimples filled with pus, which lasted three days and were followed by boils or sores lasting five days more. There were no unfavorable constitutional effects, except a great weakening.

Dr. A. W. Harlan read a paper from Dr. Arthur C. Hugenschmidt, Paris, France, giving the results of 200 cases of hypodermic injections of

MURIATE OF COCAINE.

The results were very satisfactory in all cases, using it for extracting, implanting, or exploring for missing teeth. For peridental inflammation he follows cocaine with antipyrine, the former to anesthetize the parts and lessen the painful effects of the antipyrine. For convenience he prepares a number of packages of cocaine, dissolving one-half of a package in 20 drops of distilled water for an operation. In this way he is sure that it is always fresh. He attributes much of his success to his antiseptic precautions. He has the patient first rinse the mouth with a solution of permanganate of potash; then the parts to be injected are touched with cotton dipped in bichloride of mercury $\frac{1}{1000}$. He injects the cocaine midway between the margin of the gum and the apex of the tooth on the outside of the gum and on the palatal region, one immediately after the other. It bleaches the gum very white, but this is only temporary. He thinks the anæmia of the injected parts due to inhibitory action on the peripheral nerves. If, in introducing the needle he strikes bone, he withdraws it without injecting, as necrosis might otherwise result. He never injects cocaine if the patient is very much frightened, which is liable to produce vaso-motor disturbance of the peripheral circulation—pallor, cold extremities, fainting, perhaps unconsciousness, anæmia is a great contraindication; also great obesity, hysteric tendency, or advanced stage of disease. If unfavorable symptoms supervene the patient should be placed in a recumbent position, 5 drops amyl hydrate inhaled; 40 drops of ether in brandy may be given, or if a large amount of cocaine has been used two or three drops of sulphuric ether may be given hypodermically.

Dr. L. G. Noel read a paper giving a complete review of the

DENTAL MATERIA MEDICA,

followed by one from

Dr. A. W. Harlan on

SOME NEW REMEDIES.

These were principally coal-tar derivations and products of the essential oils; also antipyrine and antifebrine; the discovery of new microbes and the remedy for the destruction of their spores without injury to the tissues. Guiacol is a new derivative of wood creosote, having the active principle of that drug, with an odor of cassia and resorcin. It is an oily disinfectant and destroyer of microbes in the human mouth. After decomposition of a dead pulp, the tooth must be thoroughly disinfected, cutting is not enough. Aqueous disinfectants rapidly permeate the tubuli but the oils, through their slow deposits do the work more certainly if sufficient time is given. Guiacol may be sealed up in a pulp cavity for 40, 60, or 70 days, and the contents be found perfectly disinfected.

Dr. Genese wished to add to the long list of medicaments named by Dr. Noel, one which he found very valuable, but which is not in general use—the extract of white poppies—which has all the sedative properties of opium without its soporific effect.

Dr. Story spoke of the wonderful anæsthetic effects of *rapid breathing*.

Dr. Patterson thought it very desirable that we should have a correct and scientific demonstration of the shortest time in which different germicides would thoroughly accomplish their work.

Dr. Sudduth said that this could be scientifically demonstrated by cultures, but successful use in the mouth is the most practicable.

Dr. Patterson: When new remedies are introduced, we should have given positive evidence of their value. The mere fact that they have been used without after trouble is mere guess work.

Dr. Peabody asked for information as to the physiological effects of lead as a root filling. He had first used it, experimentally, ten years ago. He had an apparently incurable abscess on the left superior lateral. He went through the whole range of medicaments, treating for eight months. At one time it healed externally, but soon forced an opening over the canine. The patient was obliged to be absent for two weeks, and wishing to keep food out of the tooth and also to strengthen it for extraction he concluded to fill it with a piece of soft lead, which he shaped with his knife and crowded down into the tooth. At the end of the two weeks the patient returned with the abscess entirely cured. Having a bicuspid under treatment in the same condition, he determined to try the lead again, as an experiment. The foramen being very large—the size of a pin head—he drew lead through a draw plate to approximate the size, but in placing it in position he was conscious that it had projected beyond the apex, but did not remove it. He crowned the tooth with a porcelain face and gold backing. The abscess was entirely cured in five days, and the tooth did good service for two years when the crown loosened; in preparing to replace it he found the root so broken in the line of its axis that he decided to extract it. He found the lead projecting beyond the foramen, and the angles as sharp as when he trimmed it with his knife, which upon his theory the serum bathing the apex had combined with the lead forming salts which cured the abscess. He has continued to fill abscessed roots with lead, with almost unvarying success, but has never been satisfied as to the therapeusis.

Dr. J. J. R. Patrick confines his treatment to three therapeutic agents, which meet every requirement: 1st, Corrosive sublimate 5 gr. to the oz. as a germicide for those parts we can get directly at; there is no danger in this strength from the small quantity taken up on fibres of cotton, but it must not be used in large quantities, the $\frac{1}{1000}$ solution is too trifling. 2nd, Peroxide of hydrogen for burrowing pus in cancellated bone. It has great penetrating powers, and large affinity for pus, cleaning it all out. The 3rd is nitrate of silver, the use of which is well understood.

Dr. Sudduth said that there would be no danger in using bichloride of mercury if it could be confined to the pulp canal, but as prescribed in mouth washes, to be used two or three times a day, it is poisonous and dangerous. As to the comparative value of corrosive sublimate and carbolic acid, when we require an antiseptic and anti-phlogistic, to destroy microbes, we want corrosive sublimate for a chronic abscess; when stimulation is required, carbolic is the thing. In the cases of abscess cited by Dr. Peabody, he thought it was due more to changed conditions, the crisis having been reached, than to any therapeutic effects of the lead.

Dr. Harroun thought that closing up the cavity prevented the continual irritation which kept up the abscess. As long as we keep stuffing in first one thing and then another we get no cure, but stop it up and let it alone and it gets well.

Dr. Ingersoll: There can be no real cure had unless all the circumstances are taken into consideration. Destroy the germs, but that is not all; close the foramen, but that is not all. There are abnormal tissues around the root which must be removed. The condition of the cementum must be considered; also of the pericemental membrane. Diseased tissues must be deanimalized, and then by stimulation removed through the circulation. No one drug can be trusted alone; to produce different effects, we must use different means. Peroxide of hydrogen is not a stimulant and will not accomplish everything.

Dr. W. H. Morgan: Carbolic acid is used for its stimulating as well as its escharotic and germicidal properties. It stimulates to healthy granulation. If we wish to produce a resolution and absorption, then use tincture of iodine, to reduce induration of glandular tissue, or to remove the sac of an abscess. As a rule we can trust to Nature to effect a cure, but we can assist in removing the cause of trouble. In an abscess the trouble is due to gases passing through the foramen into the soft tissues. When the foramen is closed, no matter what with, the cause of trouble is removed, and a cure follows. The lead used has no therapeutic effect, it simply closes the foramen mechanically.

Dr. Staples said that for years he had treated abscesses for four, five, and six months without cure. Fifteen years ago Dr. Story suggested to him to force dry oxide of zinc through the apex (after carbolic acid) and then fill with gutta-percha. He had been following that method for thirteen years, and no failures. For pyorrhœa alveolaris, or where both stimulating and astringent effects are required, he uses carbolic acid and caustic potash.

Dr. A. O. Rawls: Holds views as to the possibility or probability of curing pyorrhœa alveolaris which are opposed to those of half of the profession. He holds that the deposits in the incipient stage result from the action of conditions which are either acquired or hereditary, and all merely local treatment worthless in effecting a permanent cure. It only stops for a time the action of other than the original cause. Etiology differs in curable and non-curable cases. Non-curable cases are due to the effects of mercury or some of its elements in something else, perhaps in tomatoes, perhaps in chlorine, as in the too free use of salt, salt meats, etc. We may use the whole range of known remedies and yet not reach the cause of the case in hand. At certain times or at certain ages, the system may be susceptible to the action of agents which at other times will have no effect because of some change in the systemic conditions. Inherited disease may lie dormant for twenty or twenty-five years, and then appear. In acquired pyorrhœa a cure may be effected after the removal of deposits. If from the effects of mercury the membrane around the roots of the teeth breaks down and melts away, the process will always remain rough, and never heals. A cure can never be accomplished, the patient can only be made more comfortable.

Dr. Story said he lived in the very hot-bed of the disease, and would be glad to learn if there was anything that could cure it. He thought it more probably due to the diseases for which mercury was taken than to the mercury itself.

(To be continued.)

Compilations.

"Gather up the Fragments."

SOME AFFECTIONS OF THE GUMS.*

BY FRANK LANKESTER, L.R.C.P., M.R.C.S., L.D.S., ENG.

In the *Dental Record* the author says that I shall endeavor, so far as time will permit, to bring before your notice some of the chief and more important affections of the gums, including those that usually come under the care of the general practitioner, and I shall hope to show how very important it is that we, as dentists, should be thoroughly well acquainted with them.

We of all men should know what is the normal healthy appearance of the gums, and should therefore also at once notice any abnormal condition that they may present. In examining a patient's mouth for caries, or any other diseased condition, we do well to cultivate a habit of thoroughness; we should not be satisfied with merely looking at the teeth, but should be careful also to inspect the gums, for we may often learn much about the condition of a tooth or root by simply observing the state of the surrounding parts. Then, if anything abnormal be present, we should endeavor to find out the cause of it and, if possible, a remedy for the same.

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* Read before the Students' Society of the National Dental Hospital, London, Eng.

I thought the following was, perhaps, the best *classification* of the different affections.

We may broadly divide the affections into two classes: the LOCAL and the CONSTITUTIONAL.

The *Local*, consisting of those which originate in the gums themselves, include the following:

1. Simple inflammations from injury, etc.
2. Parulis, gumboil or alveolar abscess.
3. Simple epulis, or fibroma.
4. Polypus or gum, or simple hypertrophy.
5. Papillary and warty growths.
6. Vascular tumors, or nævoid growths.
7. General hypertrophy.
8. Pyorrhœa alveolaris (so-called Riggs' disease); and
9. Primary epithelioma, or cancer (carcinoma).

The second class, the *Constitutional*, consist of those which occur in the course of a general systemic disorder, and include—

1. Syphilis.
2. Scrofula.
3. Scurvy.
4. Purpura hæmorrhagica.
5. Addison's disease.
6. Stomatitis, of which there are three forms: simple; ulcerative; gangrenous (noma).
7. Aphthæ, or thrush.
8. Herpes; and
9. Lastly, the metallic poisons: lead, silver, mercury and copper.

We should certainly be able to form a correct diagnosis of any case we may meet with, though to do this often requires considerable practical experience as well as mere book knowledge. Many of these affections we, as dentists, are often called upon to treat, and there are others which, having diagnosed, we should hand over to the care of the general practitioner. These latter, which are generally the more serious cases, we may from time to time, perhaps quite accidentally, meet with, and we should be just as well acquainted with them as we are with the simpler affections. This, too, should be the more insisted on, as we are more likely to see them in their earlier stages, and by a proper and immediate appreciation of the diseased condition we may be able to warn our patient, and thus induce him to obtain prophylactic treatment, and thereby perhaps save him from a long and serious, nay even fatal, illness.

Before we now proceed to discuss some of these affections, it would perhaps be well for me to first very briefly remind you of the chief points in the *structure* of the gums. They are mainly composed of a dense fibrous connective tissue, cohering very closely with the alveolar and dental periosteum, whilst on their surface they are covered with a very vascular mucous membrane; this is mostly smooth, but, in the neighborhood of the necks of the teeth, it is beset with very fine papillæ.

With these opening remarks, I will now try to place before you as briefly as possible a few observations on most of the various affections which have been enumerated, and we will first consider the *local* ones, commencing with—

Parulis or Gumboil.—The external manifestation on the gum of alveolar abscess. This affection consists of un inflammation usually running on to suppuration, occurring about the apex of the root of a tooth. The apex itself becomes enclosed in the abscess sac, the latter being adherent to the root at a little distance from the apex. The dental periosteum is included in the sac walls. The tooth pulp is nearly always dead, and it is the decomposition of the dead pulp that generally gives rise to the abscess. The dental periosteum first becomes inflamed at the apex, suppuration soon takes place, and the pus that forms strips off the membrane from the root, and an alveolar abscess is the result. When there is no exit for the pus through the pulp canal, it finds an exit for itself by "pointing" externally, and generally on the gums, as the so-called gumboil. In rare cases simple periostitis from cold, etc., may go on to suppuration, and so be the cause of parulis. The pus soon finds its way through the alveolar plate, and appears beneath the gum immediately (as a rule) over the diseased root as a small, red, tense, very tender swelling.

There is always a good deal of pain, it being generally worse at night when the recumbent posture is assumed. Pain is of a throbbing character. There is always a certain amount of ostitis and periostitis around the seat of inflammation, so that gentle percussion on the adjacent teeth will cause pain, though of not nearly so severe a degree as will be that caused by similarly percussing the tooth actually connected with the abscess. This difference in tenderness will help us to decide which is the offending tooth. If left alone, the pus will come to the surface and discharge itself, leaving behind it a sinus which frequently remains open for months.

At the orifice of the sinus, little sprouting granulations often appear, indicating the site of a former gumboil which has discharged itself in this way.

As regards treatment, I cannot do more than just mention that in the early stages before suppuration has taken place complete relief may often be afforded by painting the inflamed area two or three times with the liniment of iodine, but before doing this it is very important to first thoroughly dry the gums previous to applying the iodine, as otherwise the latter simply floats as it were on the moist mucous membrane without affecting it very materially. A good saline purge should also be administered. This will often be found very useful in the case of a recently stopped tooth which appears to be "going wrong," but which you do not wish to interfere with if you can possibly avoid so doing. The tincture of iodine is too weak a preparation to be of much good. We must not forget the possible results of alveolar abscess if neglected or improperly treated. External poulticing (the usual resort) will frequently cause it to point on the cheek externally. I had a case only two weeks ago in which there had been a fistulous opening in the cheek for months, and a probe passed right through into the mouth; I removed a root and the sinus healed up immediately. When suppuration, therefore, has set in, relief can and should at once be given by evacuating the pus, either by a small lancet or by the extraction of the offending root.

Superficial Gumboil.—Salter mentions that there is another form of parulis occasionally met with which is associated with loose teeth, absorbed sockets, and tumid gums. The pus is situated in the substance of the latter, but quite superficial to the alveolar processes.

The next affection we have to consider is *Epulis*. This term has been vaguely applied to various tumors in and upon the gums (a fact to be explained by the etymological meaning of the word, *epi*, *oula*, upon the gums). But by the simple or true epulis we mean those dense fibrous tumors that arise upon the surface of the alveolus and involve the periosteum, and by their growth cause the overlying gum to become stretched over them, the gum being otherwise healthy. They differ in origin, history and structure from those pendulous masses so often found around decayed teeth and known as polypus. There is no connection between epulis and caries as is the case with polypus and caries. A true epulis, then, is a hard dense mass of fibrous tissue, starting from the alveolar margin, usually between two teeth and more generally on the labial than on the lingual aspect. It is usually seen upon that part of the gum projecting up between the necks of two teeth, one or more of the latter being usually displaced by its growth, which is slow and regular. It increases more in its basal area than in its vertical diameter, starting from the porous and vascular alveolus and being closely connected with the periosteum usually by a narrow pedicle. The gum over it is usually healthy, but it may be mottled and slightly lobulated. The tumor itself is tense and elastic to the touch, insensitive and of low vascularity. It size varies from that of a pea to that of a walnut and it is about twice as often met with in the upper as it is in the lower jaw. It occurs usually in connection with some one particular tooth, the removal of which, together with the excision of the tumor, nearly always results in a complete and immediate cure. It is very rarely seen in an edentulous jaw, and then it will generally be found to be connected with some hidden stump. Salter relates a good case in illustration of this, in which a tumor repeatedly recurred after excision until the real cause was discovered. The epulis extended from the canine to the wisdom tooth, the four intermediate teeth having been removed. It was excised again and again, but always recurred until on one occasion a first molar stump was discovered and extracted, after which there was no further recurrence. The alveolar periosteum, the endosteum and the fibrous tissue of the gum are all continuous, and all share alike in the development of this growth. They are perfectly innocent and painless tumors, but they may take on a malignant character.

As to the treatment. In an ordinary case it will be well to first try the effects of simple removal by excision with a scalpel, together with a small portion of the spongy bone at the base of the growth. If it returns, as is frequently the case, repeat the operation together with the extraction of one or more of the implicated teeth. The alveolus will thereby become absorbed and will no longer form a nidus for the recurrence of the tumor. When arising deeply from the socket of a tooth, it may then be necessary to cut away a V-shaped portion of the alveolus, together with a very small piece of the subjacent bone. This can easily be done with a Hey's saw and a pair of bone nippers. Any hemorrhage can easily be checked by the actual cautery. If the growth be unrestrained by treatment, it will continue to enlarge and interfere with articulation and mastication, and thereby causes much inconvenience. The surface but rarely ulcerates, but it may be injured by opposing teeth; and ulceration thus excited may give rise to a copious fœtid discharge. Sometimes sarcomatous cells are mixed up with the fibrous tissue, and we may then expect it to recur after removal.

(To be continued.)

Editor's Specials.

"Write the Vision and make it plain."

FALSE TEACHING.

This is dangerous in proportion to the plausibility with which it is set forth, the importance of the truth perverted by it, and the influence and reputation of the teacher.

In spite of the best intentions much of it gets publicly before our profession, both at society meetings and in the journals. We take it that no member of the dental profession intentionally teaches false doctrine; yet in the confusion of debate one may say something *likely* to be misunderstood, and even when he states the exact truth, in an accurate manner, he is *liable* to be misunderstood.

On picking up an exchange we find objection to some false teaching charged to our senior editor. And if correctly reported he is half guilty or more.

At a society meeting Dr. Conrad had spoken of some tin and gold fillings having failed, and the report goes on,—"Dr. Watt said that in some cases the action brought about by the combination caused unnecessary sensations or pain in the tooth and sometimes so severe as to cause sleeplessness. He stated that it was not thoroughly understood just what the trouble was, but he was of the opinion that it was thermal electricity."

It was not the intention of Dr. W. to refer to the present mode of using the two metals in filling, for he has had no opportunity to see the results of this practice. He referred to the old method of economizing by filling a large cavity nearly full of tin, and finishing with gold. He has seen trouble result from this repeatedly. If others didn't see it, the *facts* remain. The false teaching went forth, by some misapprehension, and if it can do mischief it will, the same as if it had a valid origin.

In noticing this Prof. Miller, of Berlin, says, "I do not at all agree with, in fact I most emphatically disagree with, Dr. Watt's statement. Having used tin and gold in over ten thousand cases, and seen nearly as many more where it had been used by Drs. Abbott, Jenkins, Sachs, and others, I have not in a single case observed any uneasy sensations characteristic of this combination."

An examination of some twenty thousand cases ought to give evidence of probable safety. Nor would we expect the trouble referred to from the two metals intimately mixed, and both coming to the surface.

We cordially thank Dr. Miller for calling attention to the error. He knows that negative testimony cannot set aside positive, but here they are not on the same subject.

RECENT RESEARCHES ON DENTAL CARIES.

Discontent with present attainments is a great incentive to progress. In common with our own feelings, we suppose every thoughtful dentist regards our indefinite notions on caries as a reproach to the whole profession. It is not flattering to the medical profession either. That from the dawn of science till the present, physicians failed to learn that decay of the teeth is different from caries of bone, is at least remarkable. For want of clearer thought we have the misnomer, caries, to carry in our literature, while in obedience to the dictates of science we must explain it away.

Nothing in dental research gives us so much pleasure as the knowledge of the fact that so many bright minds are searching in this direction. Long ago we conducted a long, tedious and fatiguing set of experiments to find out, not the predisposing, but the exciting or immediate causes of dental caries. We frankly gave our conclusions and opinions, and if found to be not sound, let them go to the dogs. Let it be distinctly understood that nothing we may say or write is to be regarded as unfriendly criticism. If by an occasional hint or suggestion we may help to guide or direct these investigations in proper channels, we shall be gratified.

We have been told that not the microbes, but their waste materials, induce caries, and that the result from microbic action is lactic acid, and that artificial caries has been induced by this acid. But does not this idea refer to dental decay as a unit? Chemical action is definite in nature, and a reagent is needed to produce each reaction. Are constipation and diarrhœa less alike than black and white to decay? For over thirty years we have not doubted that one variety of dental decay may be and is caused by lactic acid.

But is lactic acid the "waste material" of the microbes? Or is the acid caused by chemical action on the waste materials? The waste matter of the horse, and similar animals, contains no nitric acid, but by chemical action on it, this acid is often formed.

It has been taken for granted, by at least one taking part in these recent discussions, that acids can act only on the lime salts of the teeth, and not on their organic matter. But do not nitric, acetic, and lactic acids act vigorously on organic animal matter? It is evident that what is commonly called erosion is caused by an agent acting with almost equal promptness on the organic and inorganic materials of the tooth, if it is at all caused by chemical action.

It has been recently claimed, too, that the reagents have nothing to do with causing the special colors in the several varieties of decay. This is plausible; but is it true? If the lime salts are dissolved out of dentine or bone, the organic material may be left in its natural color, or it may be stained. If unstained at the time, it is likely to change color gradually as acted on by agents incidentally brought into contact with it. The leaves of the forest fade and fall with colors many and varied. In the main these leaves are composed of carbon, oxygen and hydrogen. They are gradually acted on by oxygen, and as carbon burns slower than the other constituents, it is left after they are gone. And this explains the gradual blackening process, as free carbon not crystallized is black.

If we take a portion of dentine and dissolve its lime salts in hydrochloric acid, the organic matter will be left in nearly its natural color, but by time and exposure will become darkened. And all dentists are familiar with a form of dental decay in which the lime salts are dissolved away, while the organic matter is but little, if at all, reduced in bulk. In process of time this darkens as described above. But it never gets to look like " black decay."

Lately one of our friends has thoughtlessly told us that all the acids are capable of corroding the teeth; but he didn't intend to include tannic nor carbonic acid, nor a great many others.

If these lines were intended for criticism or review, we would have gathered up our exchanges and made literal quotations, but as friendly hints we don't even wish every reader to know who has made the suggestions referred to. Let the researches go on, and let all encourage them—even those who cannot aid them.

What We See and Hear.

EDITED BY L. P. BETHEL, D. D. S.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession. Send all communications to the Editor, 513 Jefferson St., Toledo, O.]

Antisepsis.—The importance of careful antiseptic precautions in the treatment of wounds is every day becoming more and more apparent.

Gingival Chancre.—Dr. Girode reports, in *La France Médicale* of March 20, 1888, a case of Syphilitic chancre engrafted upon a gingivitis, due to the action of phosphorus.

Guaiacol.—Dr. Sahli suggests that this be used in place of creosote, because its composition is constant and unchangeable, while that of creosote is frequently uncertain.—*Med. News.*

Artificial Pumice Stone.—Pumice stone is now prepared by molding and baking a mixture of white feldspar and fire clay. The product is said to have superseded the natural stone in Germany and Austria.

Saccharine has considerable power in preventing the decomposition of many animal matters, and may be added to gelatine, gum, and starch solutions, with the same effect as carbolic, salicylic, and benzoic acids.—*Dental Record.*

Cocaine.—Cocaine is not used as heroically as formerly, $\frac{1}{3}$ gr. is now considered sufficient. In case of unpleasant symptoms, 40 drops of Nitrate of Ammonia in water or 5 drops of Nitrite of Amyl, and repeated in ten minutes if necessary.—*Archives.*

Removal of Old Varnish.—A Mr. Myer has just patented, in Germany, a composition for removing old varnish from objects. It is obtained by mixing 5 parts of 36 per cent. silicate of potash, one of 40 per cent. soda lye, and one of sal ammoniac (hydrochlorate of ammonia).

Dental Varnish.—A good quick-drying varnish for dental or other purposes is made as follows:

℞	Saturated solution of iodol in alcohol,	1 part.
	Hubbard's Negative Varnish,	6 parts.

—*Dental Register.*

Soldering Block.—Dr. Van Woert's method is to take a bowl and partially fill with water; mix in equal parts of powdered charcoal and pumice until quite muddy in consistency; next add plaster slowly, stirring constantly till quite thick, being careful to avoid lumps; pour on a marble or glass slab and shape as fancy dictates.—*Dental Review.*

Logan Crown Grinder.—Take a hollow mandrel like No. 305, and while in the hand-piece heat the end and mount on it a corundum wheel such as No. 00, being careful to make its outer face run true. The neck of a Logan crown can then be ground true without any risk of grinding the post, which enters and is protected by the smooth socket of the mandrel.—W. S. H. in *Cosmos.*

Painless Tooth-Drawing.—Hénoque and Frédot, before the Société de Biologie of Paris, drew attention to a plausible and neat application of a physiological principle. An atomized ether spray directed on the region about the external auditory meatus will produce, through the distribution of the trigeminus, an anæsthesia quite sufficient to annul the pain of drawing teeth.—*Ther. Monatshefte.*

Salicylate of Sodium in Toothache.—Dr. Thomas recommends salicylate of sodium, in doses of ten grains, every half-hour, as an internal remedy for toothache. It has been found effective both in rheumatic toothache and in caries or periosteal inflammation. Though its effect is not lasting, it is nevertheless capable of alleviating or removing the pain for one or several days.—*Med. Brief.*

Recurrent Dental Abscess.—Dr. Kums reported at a meeting of the Société Médicale d'Anvers (*Annales et Bulletin*) the case of a lady suffering from an alveolar abscess, which presented periodical exacerbations occurring every afternoon at about four o'clock. The patient lived in a malarious district, and, suspecting a malarial cause for the periodicity, the author prescribed quinine, with the result of obtaining a perfect cure.

To Avoid Disks Catching the Rubber-Dam.—Dr. M. C. Gottschaldt says: Those having trouble with the sand paper or corundum disks catching the rubber-dam while using them, will find the following of advantage: Keep a cake of toilet soap on the operating stand, and before using the disk, run the edge once or twice over the dry soap; this will give a smooth edge, which will glide over the dam without any trouble.—*Archives.*

Chloroform Water as a Germicide.—Dr. Salkowski has recently investigated the action of chloroform upon organized ferments and upon some forms of bacilli. He found that all fermentative processes dependent upon the vitality of micro-organisms, such as the alcoholic, lactic, and bacterial putrid fermentations, were retarded by it; but it did not interfere with the action of non-organized ferments. Upon the comma bacillus chloroform water acts with extraordinary energy. Dr. Salkowski considers that the preservative and disinfectant properties of chloroform water might be much more freely utilized in the laboratory, and that it might take the place of glycerine in the preparations of pepsin, trypsin, invertin, and in anatomical preparations.—*Phar. Jour.*

To the usual cocaine solution injected between gum and tooth, Martin (*Lyon Médicale*) has added antipyrin. The anæsthesia is as complete and lasts longer, though slower in coming on. It has the additional advantage of diminishing the amount of cocaine used and the risks in consequence. The percentage of cocaine is four, antipyrin forty, in distilled water. Martin affirms of this mixture a quick influence over the pain of acute periostitis. —*American Jour. of Med. Sciences.*

An Application for Painful Dental Caries.—The following formula is recommended:

℞	Dry alcoholic extract of opium	1 part.
	Camphor	1 "
	Peruvian balsam	1 "
	Mastic	2 parts.
	Chloroform	20 "

Sig.—A pellet of cotton soaked in the solution is to be introduced into the cavity.

Hæmostatic.—Dr. Huchard recommends the following prescription to arrest hemorrhage:

℞	Ergotin	
	Quin. Sulph.	aa 30 gr.
	Pulv. fol. digitalis	
	Ext. hyoscy.	aa 4 gr.

F. pil., No. xx.

Sig.—5 to 8 to 10 pills daily.

—*Therap. Monat.*

Paste for Root Canals.—In treating teeth with dead pulps Dr. Van Woert cleanses the canals and uses the following paste:

Iodol, gr. x.
Zinc oxide, gr. xx.
Vaseline carbol, q. s. to form a thick paste.

This is placed in the canal and dressed up with a bit of bibulous paper, after which the entrance to the canal is sealed with oxyphosphate if a filling is to be inserted. If a crown is to be placed the oxyphosphate is placed around the pin. Abscessed roots so treated give no further trouble.—*Dental Review.*

To Oxidize Silver.—Dip the clean silver article in a solution of sulphide of potassium, two drachms to a pint of water. Heat this solution to a temperature of 175° F. Immerse for a few seconds only, when the article becomes blue black. For a velvet black, dip the article, previous to oxidizing, in a solution of mercurous nitrate, and rinse. Then dip in the sulphide solution as above. For a brown shade, oxidize in the potassium sulphide as above, then dip in a liquid composed of ten parts of blue vitrol and five parts salammoniac to 100 parts vinegar. After oxidation brush with a scratch brush very lightly, to brighten and variegate the surface.—*Scientific American.*

To Mend a Broken Cable.—Dr. E. H. Raffensperger writes: A quick and easy way of mending a broken cable of the White engine, is to take one of the brass tubes used in the manufacture of the little brushes for cleaning teeth which we use with the engine, and with a suitable instrument split the tube so it will just slip over the cable; place the broken ends of the cable in the tube, with a little piece of soft solder over the split; hold the "splice" in the flame of the spirit lamp and in a moment you will have a good strong joint which will in no wise interfere with the running of the engine. Of course the ends of the broken cable must be free from oil and dirt before the solder will hold.

Chloride of Iodine.—This saturated compound of the two halogens has long been known in chemistry but has not been used in medicine to any great extent. It is a volatile, unstable orange yellow crystalline powder, with a penetrating odor and an acid taste. It is more stable in solution, dissolving in water readily, forming a brown liquid.

It is an excellent antiseptic, equal to corrosive sublimate, without the danger. A solution in one part of ICl_3 to 1,000 parts of water will destroy all bacteria. It may be administered in dyspepsia internally when there is fætor or decomposition, and may also be used as a lotion in certain skin diseases.—*Chicago Med. Times.*

Chloride of Sodium.—This salt has a wider use in medicine than many are aware of. As a remedy for anemic conditions it is recommended in a daily dose for an adult of 150 grains, in addition with what is ordinarily taken with the food. Bonchardat says that well salted meat diminishes the thirst of diabetic persons and lessens the excretion of sugar. Nothnagel recommends epileptic persons to carry salt with them and swallow a quantity at the first sign of the *aura.* Rabow gives a half teaspoonful in migraine or sick headache—cures in half an hour. With some patients it is an infallible remedy. Salt is antidotal to nux vomica, curare, and to lead and silver salts. It should not be given for some hours after administering calomel. Salt counteracts the depressing effects of saline laxatives.—*Drug Topics.*

OBTUNDING SENSITIVE DENTINE AND CONTROLLING PERIDENTAL INFLAMMATION.—DR. D. F. MCGRAW gives his formulæ as follows: A 12 per cent. solution of cocaine (Merck) colored with a tincture of alkanet root and alcohol. Dr. McGraw cannot explain the action of the alkanet, but he knows, having experimented, that the alcohol alone has not had the desired effect.

For relieving peridental inflammation his preparation is 7 parts of saturated solution of Chloride of Sodium, and 1 part of Ergot.

For pyorrhœa alveolaris ½ oz. Hammamelis, 1 drachm Aconite root, ½ oz. Calendula.

He decomposes the medicament by the galvanic current of the Galvano-Faradic battery, using ordinarily three or four cells, but more in inflammation, sometimes as many as eleven.—*Dental Review.*

PASTE FOR ROOT CANALS.—DR. R. D. PEDLEY says: In filling the roots of teeth whose nerves have undergone decomposition, the following is a most excellent paste:

Ol. eucalypti - - - - -	2 parts
Ol. caryoph - - - - -	3 parts
Creosote - - - - -	10 parts

Into this gum mastic should be dissolved to saturation. After filtering through cotton-wool, thoroughly incorporate the solution with iodoform in a wedgewood mortar until it becomes almost a solid mass. The oil keeps the preparation moist; creosote to a certain extent disguises the smell of the iodoform; the gum holds it well together, and one is enabled to introduce about twice as much as when used dry. Introduce with wisps of cotton and over it place a disc of wood or metal. The preparation undergoes no change in or out of the mouth.—*Lond. D. Record.*

CHRONIC SYPHILITIC SALIVATION.—A. W. FURBER, M.D., L.R.C.S., and L.D.S., says: I have for a long time had a—gentleman—patient under my care for disease, and although my operations progressed favorably, I had many difficulties to contend with. The whole of my patient's teeth appeared to have a syphilitic taint, and with increased flow of saliva, amounting to chronic salivation. These were not the only troubles I had to surmount; but that which retarded my work most was the repeated recurrence of syphilitic ulcers of the sulcus and gums generally, which, though not painful to my patient, was still a source of considerable discomfort and militated greatly against the success of my operations. Iodia having come under my notice, I was inclined to give it a trial, and with the addition of a small proportion of liq., hydrarg. bi-chlor., taken daily before meals for a time—also used occasionally as a mouth wash—the salivation became normal, the mucous membrane assumed a more healthy state and the teeth generally looked like coming back to their original color.—*Pac. Record.*

To Dry Root Canals.—Dr. G. F. Cheney says: In the editorial matter in the September number, I notice "One of the most important processes in operating upon the roots of teeth is that of thoroughly removing the moisture from the canals, and that with the hot air syringes now in use this is almost, if not quite impossible for the current of air is so large that it strikes the floor of the cavity, and is reflected outward before it can enter the canal. If the nozzle of the syringe was sufficiently small to pass up the canal to the apex of the root, the desired result might be accomplished, but this would be impracticable, as a moment's thought would discern."

I have just such a syringe, and find it very practicable, and to my mind a canal can be more effectually dried with a current of hot air at the apex than with a warm broach.

To make this syringe I took one of Codman & Shurtleff's hot air syringes, had the nozzle cut off near the bulb, and had a thread cut that takes the Codman & Shurtleff hypodermic syringe points. I have several different sizes and shapes of these points, so I can pass them into any kind of a canal.—*Dent. Register.*

Treatment of Pyorrhœa Alveolaris.—Dr. Harlan said he does not treat all cases alike, but treats each according to the necessities. That, in the first place, it does not seem to be plainly understood always what the disease is. That, in pyorrhœa alveolaris, there is frequently no tartar, no calcic deposit on the teeth affected. If only a stimulant is required, use a 5 to 10 per cent.

solution of resorcin, or a weak solution of iodide of zinc, after cleansing the parts thoroughly with peroxide of hydrogen. If there is much waste of tissue, dissolve iodol in oil of wintergreen and pack the pockets with this after cleansing. Where there is much receding, make an incision in the gum, when it is restored to a healthy condition, a little below the border, and insert crystals of iodide of zinc. This irritates the gum, pushing it up on the tooth where it adheres. The operation may be repeated several times, if necessary, each time making an incision near the border of the gum, and pushing it gradually into its natural position on the tooth.

It should be remembered that the microbe is apt to reappear on the fourth day, and that this interval should be observed in the treatment. The principal points to be observed in the treatment, are absolute cleansing of the pockets, removal of every particle of decayed bone, thoroughly washing out the pockets with peroxide of hydrogen, the introduction of an irritant and stimulant, and fastening any loose teeth by means of ligatures, bands, plates, or splints, if necessary, so that they are held immovably in place until well.—*Archives, report Mo. Society.*

MACLEOD ON CHLOROFORM.—After fairly trying most of the agents in use I now exclusively employ chloroform, and having for years kept an accurate record of its administration, and given it freely and without stint in all sorts of surgical proceedings, never refusing its benefits to a single patient, no matter what his condition or the operation to be performed, I have never had an accident except once, when an epileptic took a fit while being put under its influence, and died with a full and fixed chest. For speed and energy, for ease of application and agreeableness, for rapid recovery with little subsequent trouble, and for safety *when properly administered*, chloroform is, in my opinion, unrivalled. That it needs no apparatus but a towel is a great point in its favor. This if the record of one who has administered it constantly almost from the time of its introduction into practice, and the statement in this sense may not be without its value. I never measure the quantity used, but exhibit it freely, and take the color of the lips and the respiration as my chief guides. Making the patient count at the beginning of the administration is a most valuable aid; and Nélaton's inversion of the body with artificial respiration is, I think, the surest mode of resuscitation in danger from failure of the heart. A minute is about the average period for inducing insensibility; and it is very rare, if proper precautions are taken in the way of preparation and after management, to have any sickness. There is little doubt that "nervous" persons and those who are intemperate in the use of alcohol, tobacco, and narcotics, and also epileptics, require special care. Over-saturation from the too frequent renewal of chloroform induces, in my opinion, the chief after-trouble.—*Brit. Med. Jour.*

A Case of Necrosis.—Dr. W. J. Sibley says: Through the kindness of R. N. Sheldon, M.D., I am enabled to give the history of, to me, a very interesting case of necrosis.

Case.—A child, when about two months old, was attacked with lactic crusta, which continued for twelve months, when cholera infantum set in, causing the disappearance of the eruption. This lasted two weeks, followed by infantile marasmus for two weeks; there was a fair assimilation of food, which continued to the child's death. I was called in consultation with Dr. Sheldon on August 26th, and found the child, then about eighteen months old, suffering from what appeared to be an ulcerated left superior molar. On examination we found the maxilla badly necrosed. I extracted the first molar, and found it necessary to remove the second also; the roots of both molars were completely absorbed. After removing the accumulated pus, we found the floor of the antrum missing, and the cavity filled with a thick, greenish matter, which we had no difficulty in removing in a body with a pair of small pliers. On probing, we found the left superior maxillary and malar bones necrosed, and were able to reach the orbital cavity without causing any pain or starting blood. The cheek was also diseased, and seemed to be sloughing away; the steno duct was gone, and the parotid gland exposed. All of the necrosed bone was very soft, and was filled with a thin, yellowish matter. I regard the case as one of vast interest.

The family history was as follows: On the father's side, all were healthy. On the mother's side, one sister has scrofula, and another sister's children are scrofulous. I can trace the case to no other cause than that of hereditary scrofula. Let us hear from some of our learned men on the subject. The boy died September 24th, aged about nineteen months.—*West. Dent. Jour.*

Polishing Devices.—Dr. F. A. Williamson says: Some simple devices, well tested in my own laboratory in polishing plates, may help others in both economy and convenience:

In using sand-paper, if you have not the split mandrel, fit one of hard wood to the lathe, if practicable; instead of allowing a flapping free end, wind a piece of proper width on the mandrel a couple of folds and cement the end down with, say Spalding's glue, tie and lay aside a few for future use. A little of old rubber-dam, folded inside will make the cylinder more pliable. For reaching an angle and for rapid work, take an old cork (of which a plenty will be found in States other than Kansas), turn it to any desired shape on your lathe with a file, glove on a covering of sand-paper and tie firmly in place till dry.

The cone of pumice-stone which Prof. Harper brought to our attention I think better for general use; but it is more satisfactory to me with a simple bushing which I give it. After blocking it out with an old saw, and shaping with hatchet or chisel, I bore with any convenient instrument a perforation a little larger than the spindle to which it is to be fitted, wrap the end of the spindle with tissue paper moistened with some mucilage to a sufficient thickness to prevent the spindle reaching the end of the perforation, moisten the perforation with mucilage and screw in place; when dried thoroughly, place and turn to desired shape with an old file, resting one end of it on lathe-bench. This, of course, means you are not to wet your cone in use, as I saw one really ingenious dentist do. Your pumice trimmings let fall from the file on a piece of paper; they will make a good cutting polish.

For applying polishing powder I have found nothing superior to wheels cut from the fragments of the heaviest machinery bands made of rubber and cloth. If the smaller size of these do not reach some spot, punch one out of sole leather and place on the dental engine; while the accessible parts of a plate will be brought to a polish with a two and a half inch diameter wheel of the band material as if by magic. They need not cost any money, preserve their shape, and last almost a life-time.—*Archives.*

Essential Oils.—Dr. A. W. Harlan says: From experiments, in the laboratory and in private practice, I conclude that the essential oils are valuable agents in dental practice. They are generally pleasant to the smell and taste, and are not irritating to the soft parts or destructive to them when accidentally brought in contact with them. The essential oils are generally absorbers of oxygen; they are volatile, and some of them (as peppermint, cajeput, caraway, mustard and turpentine) are very useful obtunders of sensitive dentine. Moreover, a few of the above and others spoken of, are disinfectants, in the truest sense, destroyers of microbes and their spores. This has been proven in experiments conducted in Chicago. These oils are not miscible with water, hence when they are used as a root dressing they are not dissipated or contaminated by the saliva or mixed fluids of the mouth. They are capable of depositing vaporizable camphors that are powerful disinfectants. These camphors are soluble at a temperature below body heat. They are good menstrua for the iodine compounds, when it is desirable to use such compounds in local medication. If oily dressings are not tightly sealed in a pulp-chamber, they are not vitiated as all substances are which are soluble in water. This is an important point. If you will consider for a moment that the zinc preparations, carbolic acid, peroxide of hydrogen, bichloride of mercury, aluminum chloride, boracic acid, aseptol, resorcin, and nearly all of the coal tar derivatives are more or less soluble in water, you will see at once that oleaginous preparations, whether used as a dressing between the gums and roots of the teeth, or in the teeth themselves, whether alive or pulpless, possess this advantage over the former, in their sparing solubility under such circumstances. They may be allowed to remain for longer periods of time in roots of teeth when it is not possible to fill them at once for any reason. If an oily dressing is applied in a root in a tooth, after the removal of a pulp by heroic measures, or after its destruction by arsenic, it is a soother, an anodyne effect is produced, mephitic gases do not form in their presence. They will slowly but certainly disinfect an infected root or the dentine of a tooth, and not injure or impair the efficiency of the cementum or pericementum. They may be pumped through roots and fistulous tracts with impunity, they will not clog delicate canals, and they may be combined in various ways to promote their efficiency or produce agreeable smelling and tasting compounds.—*Dental Review.*

Books and Pamphlets.

DENTAL PATHOLOGY FOR STUDENTS AND PRACTITIONERS. By ALBERT N. BLODGETT, M.D., late Professor of Pathology and Therapeutics in the Boston Dental College. pp. 279, illustrated. Philadelphia: P. Blakiston, Son & Co. Cloth, price $1.75.

This work certainly fills a felt want in this direction, as the literature upon dental pathology is limited. The author divides the book into six parts. The first treats of the anatomy of the jaws. The salivary glands and saliva, and pathological conditions affecting them. The structure, development and eruption of teeth, and dentition. The absorption of the Deciduous Teeth, Secondary Dentition, and Development and Eruption of the Secondary Denture. Part II is devoted to the general pathology of the teeth. Part III treats of the relation of the Digestive Organs to the Diseases of the Mouth and Teeth. Bacteria and their Action in Disorders of the Teeth. Defective Embryonic development of the maxillary structures. Histological Development of the Teeth. Part IV considers the Pathological Conditions Associated with the Second Dentition, Anomalies, Variations in Size and Location of the Teeth, Fusion of Adjacent Teeth, Rachitis, Inflammatory Affections, Gangrene of the Pulp, Chronic Inflammation of the Tooth and Alveolar Process, Caries, Cause of Caries, Neuroses of the Teeth and Face. Part V contains Inflammation, its course and progress in the soft and hard tissues. Part VI, Pathological and malignant growths and their classification. Hypertrophy, Carcinoma and Euchondroma.

The author's style is clear and comprehensive, and while he does not treat the minutia extensively, he includes all that is necessary to give the reader a full understanding of the subject under consideration. It has been prepared principally for the use of students and will be of great assistance to them in the study of these important subjects. The book is neatly bound in cloth and the typographical work excellent, like that of all publications coming from these well known publishers.

[Received through Brown, Eager & Hull, general Booksellers and Stationers, Toledo, O.]

INSANITY. Its Classification, Diagnosis and Treatment; a Manual for Students and Practitioners of Medicine. By E. C. SPITZKA, M.D., Professor of Medical Jurisprudence and of the Anatomy and Physiology of the Nervous System, at the New York Post-Graduate School of Medicine, President of the New York Neurological Society, etc. pp. 424, illustrated. New York: E. B. Treat, 771 Broadway. Cloth, price $2.75.

This is the second volume of the series "Medical Classics," a series of standard medical works by American authors, including recent foreign works with notes and additions by American authors, and now being issued by this well known publisher.

This second edition of Dr. Spitzka's volume on Insanity has been carefully revised, many corrections noted and much new matter added. The author is well known in the medical profession as an eminent man and his teachings are accepted as high authority upon this special branch of medicine. He has made definitions, classifications, diagnosis and treatment plain and practical, laying particular stress upon points comparatively new and presents the whole subject in such a manner that the rudiments of this difficult and intricate specialty may be easily acquired and understood. There are numerous cuts illustrating diseased conditions of the brain.

The extensive and varied experience of the author makes it a valuable work and it has been adopted as a text-book in many of the American colleges. Altogether it is a very complete treatise upon this subject with which many practitioners of the present day should be more familiar.

HANDBOOK OF TREATMENT. Arranged as an Alphabetical Index of Diseases, to facilitate reference, and containing nearly one thousand formulæ. By WILLIAM AITKEN, M.D., (Edinburgh,) F.R.S., Professor of Pathology in the Army Medical School; Examiner in Medicine for the Military Medical Services of the Queen; Fellow of the Sanitary Institute of Great Britian; Corresponding Member of the Royal Imperial Society of Physicians of Vienna; and of the Society of Medicine and Natural History of Dresden, etc. Edited with Notes and Additions by A. D. ROCKWELL, A.M., M.D., late Electro Therapeutist to the New York State Woman's Hospital. pp. 444. New York: E. B. Treat, 771 Broadway. Cloth, price $2.75.

Like the above this is one of the Medical Classics and, as the others, comes from the pen of an eminent physician. The author in his preface says:

"There is, perhaps, no more striking characteristic of the medical practitioner of to-day, and none better illustrating the pervading spirit of the age, than the universally observed tendency among medical men to shun (in medical literature) the unrealities of theoretical discussion, and to appropriate with avidity only facts which they can instantly transform into working force."

With this aim in view this work has been prepared. It is comprehensive, concise and thoroughly practical. The book is a compilation from the last edition of Dr. Aitken's well known work on "The Science and Practice of Medicine," and comprises the chapters on treatment as written by the author. It does not confine itself to his views alone, however, but embraces the experience of many other widely known authorities. Arranged as they are in alphabetical order the practitioner can turn at once to any particular diseases and there find just the treatment suited to his needs, and know that it is the latest and best. As its title signifies it is a book of Treatment giving nothing else except a brief definition of the disease under consideration. It is, in fact, the practice of general medicine compressed and condensed within the limits of a book of 444 pages. A most valuable work in substance and like other volumes of this series is one of the most handsomely bound books that we have seen.

CHEMICAL EXPERIMENTS FOR MEDICAL STUDENTS. Arranged after Beilstein by W. S. Christopher, M.D., Demonstrator of Chemistry, Medical College of Ohio, Cincinnati. Cincinnati: Robert Clarke & Co., Publishers. 1888. Cloth, price $1.00.

In the limited time available for Practical Chemistry in most medical colleges, it becomes desirable for the student to acquire the general principles of the science and such special facts as may be most useful to him in practice, as directly as possible; to study chemistry from the medical rather than from the chemical standpoint.

In preparing these experiments the author has followed the popular plan of Beilstein, and has kept constantly in mind the chemical necessities of the average medical student. The book has been the laboratory text-book at the Medical College of Ohio, for the past three years, and its use there has proven satisfactory. It has also been adopted for laboratory use at the Miami Medical College, and the Ohio College of Dental Surgery.

The experiments cover work with the principal metals and acids using Beilsteins examples. In addition, the more important alkaloids and some organic compounds of medical interest are considered. In physiological chemistry, the work deals with the proteids and carbo-hydrates, the digestive processes, blood, bile, milk, urine, saliva, etc.

The acid tests recently introduced for the clinical examination of stomach contents are also given.

It may be used in conjunction with any systematic treatise on the subject. Extra blank leaves are inserted at the end for students' notes.

It is thoroughly condensed and comprehensive and should be in the library of every practitioner who is interested in the study of chemistry or who has occasion to test these different materials used in medicine.

COMPLETE COMPENDIUM FOR GRADUATION IN MEDICINE. By Walter May Rew, M.D. Poughkeepsie, N. Y.: Published by the author. Price per volume $1.00.

This work is designed as an aid to students preparing for examinations, and for practical service to practitioners as a remembrancer. The truncated form of notes is adopted throughout which will be appreciated by the intelligent student. The object of the work is not to take the place of text-books, but to so condense and arrange the most important portions of the various branches that the student has in a nut-shell just the information he requires to assist him to fix in mind the important points. All the different subjects are presented in two volumes, part I containing Anatomy, Physiology, Diseases of the Eye, and Practice of Medicine (Diseases of the Respiratory Organs). The author has incorporated the teachings of various eminent authorities and lectures in this admirably condensed and comprehensive form, realizing just what is needed, he being Principal of the Preparatory Medical College and in connection carrying on the Home Medical Course by which students receive instruction at home with the aid of these books and various other helps.

EARTH IN SURGERY. By Addinell Hewson, M.D. Second edition, revised. 12mo., pp. 309. Philadelphia: Records, McMullin & Co., limited. Cloth, price $1.00.

This is one of the "practical series" of books now being issued by the above publishers. The first edition was published in 1872 containing the results of investigations and careful study of the effects of earth upon wounds and diseases of various kinds, the author making good use of the ample clinical facilities which he possessed to confirm and elucidate the theories advanced. The present edition, which has been urgently called for, has not been essentially changed as the continued investigations only confirm what was therein stated. Complete histories are given of ninety-three cases, mostly of severe and complicated varieties, such as compound and comminuted fractures, which often involved the joints, phlegmonous inflammations, lacerated wounds, excisions, and amputations, all of which were attended with most gratifying results.

The earth used was the yellow subsoil obtained from deep diggings. The author claims that the substance, properly applied, has powerful deodorizing properties and remarkable effects in relieving pain, inflammation, and putrefaction, and in promoting the healing process. The curative effects of the application are believed to be due to the presence of double silicate of alumina and potash, which in a free state aids formative action in the wound to which it is applied.

A MANUAL OF PHARMACY AND PHARMACEUTICAL CHEMISTRY. By Chas. F. Heebner, Ph.G., Instructor in Theory and Practice of Pharmacy, at the College of Pharmacy New York City. New York: Published by the author at No. 5 Gold St. pp. 213, price $2.00; interleaved $2.25.

This book although designed especially for pharmacists and pharmaceutical students, contains information that is of great interest to the general practitioner of medicine or dentistry. The amount of material presented, arrangement of topics and manner of their treatment, has been so simplified and concisely stated that it recommends itself as a book of ready reference or study.

The author divides the work into three parts. Part I embraces Metrology, Gravitation, Weight, Collection, Preparation and Preservation of Botanical Drugs, Mechanical Subdivision, Heat, Solutions, Maceration, Percolation, Vaporization, Separation of Solids from Solution and Generation, Absorption, Collection of Gases. Part II, Inorganic Pharmacy, Acids in general are treated of, Alkalies and their Compounds as Potassium, Sodium and Ammonium Salts, their source, reactions, general impurities, and tests; Alkaline Earths and their compounds, sources, tests, and general impurities; The Halogens and their salts, their properties and tests; Preparations of the Metallic and Non-Metallic Elements, their occurrence, tests, general impurities, antidotes, etc. Part III treats of Organic Pharmacy, taking up the Cellulin Group, Amylaceous Bodies and their Derivatives, Exudation of Plants, and closing with a chapter on Toxicology, giving a classification of Poisons, Symptoms, and Special Antidotes. The book is handsomely bound in cloth and will make a useful addition to the library.

ALDEN'S MANIFOLD CYCLOPEDIA. It is generally admitted that a good Cyclopedia is a desirable possession for every home. As to which Cyclopedia is the best for popular use, the matter of choice should depend somewhat upon the use for which it is intended. A customer of ALDEN'S MANIFOLD CYCLOPEDIA writes to the publisher as follows:

"I have been exhibiting the Manifold among my friends and acquaintances, and expatiating on its excellence and wonderful cheapness. There is no reason why every young man in the land who has occasion to refer to a cyclopedia should not possess it. The laying by of but five pennies a day for six months will put him in possession of a work that will be of lasting benefit."

The fifth volume of the MANIFOLD CYCLOPEDIA fully sustains the good reputation of the previous issues. The publisher will send specimen pages free to any applicant, or specimen volumes may be ordered and returned if not wanted. Reduced rates are offered to early purchasers. John B. Alden, Publisher, 393 Pearl St., New York; 218 Clark St., Chicago.

[Our readers who desire any of the books reviewed in these columns, or any other works issued by the publishers, can order through us.]

Our Aftermath.

CELLULOID is now being used with success in sheathing vessels in place of copper.

DR. W. H. ROBINSON, of San Francisco, Cal., claims that he first advocated Implantation in August, 1880, and refers to the *Dental Jarius* of that date.

IN DR. DUN'S MEMORY.—Dedication of a Bed in the Children's Hospital. The friends of Dr. Walter A. Dun could have done no more appropriate thing in his honor than they have done in endowing a bed to his memory in the Episcopal Hospital for Children on Mt. Auburn.

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THE
OHIO JOURNAL
OF
DENTAL SCIENCE.

EDITED BY
GEORGE WATT, M. D., D. D. S.,
XENIA, OHIO.

PUBLISHED MONTHLY BY
RANSOM & RANDOLPH,
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Communications intended for the Editor should be addressed to "DR. GEO. WATT, Xenia, O."

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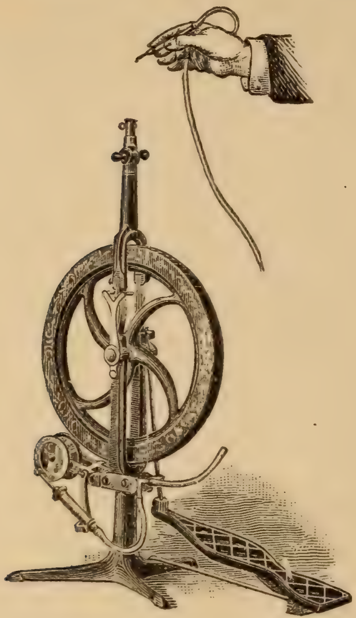

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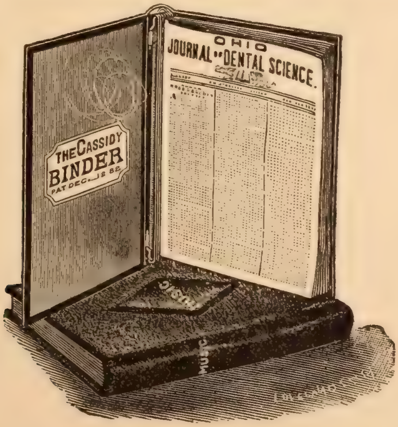

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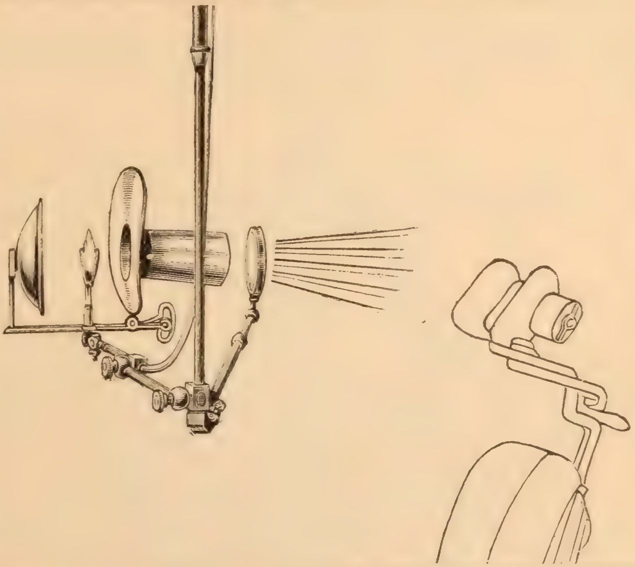

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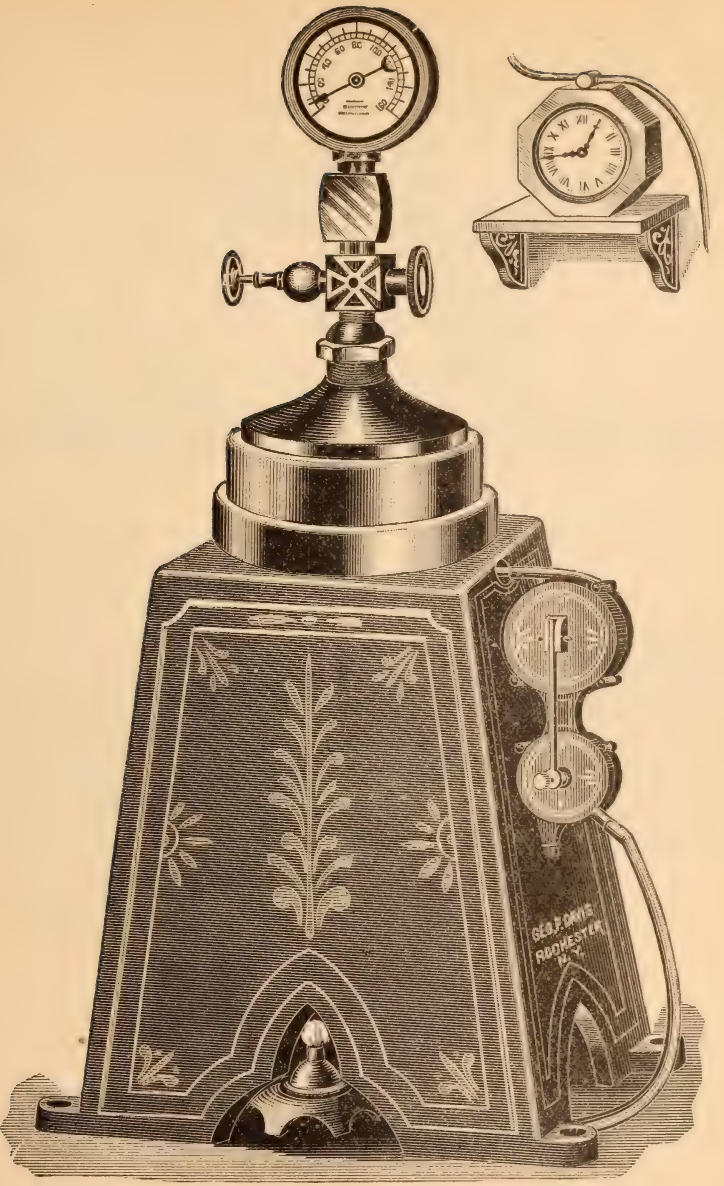

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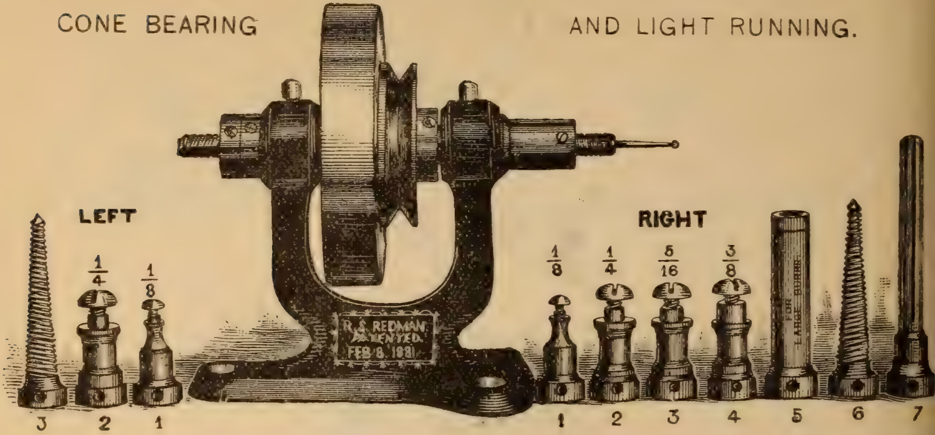

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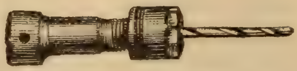

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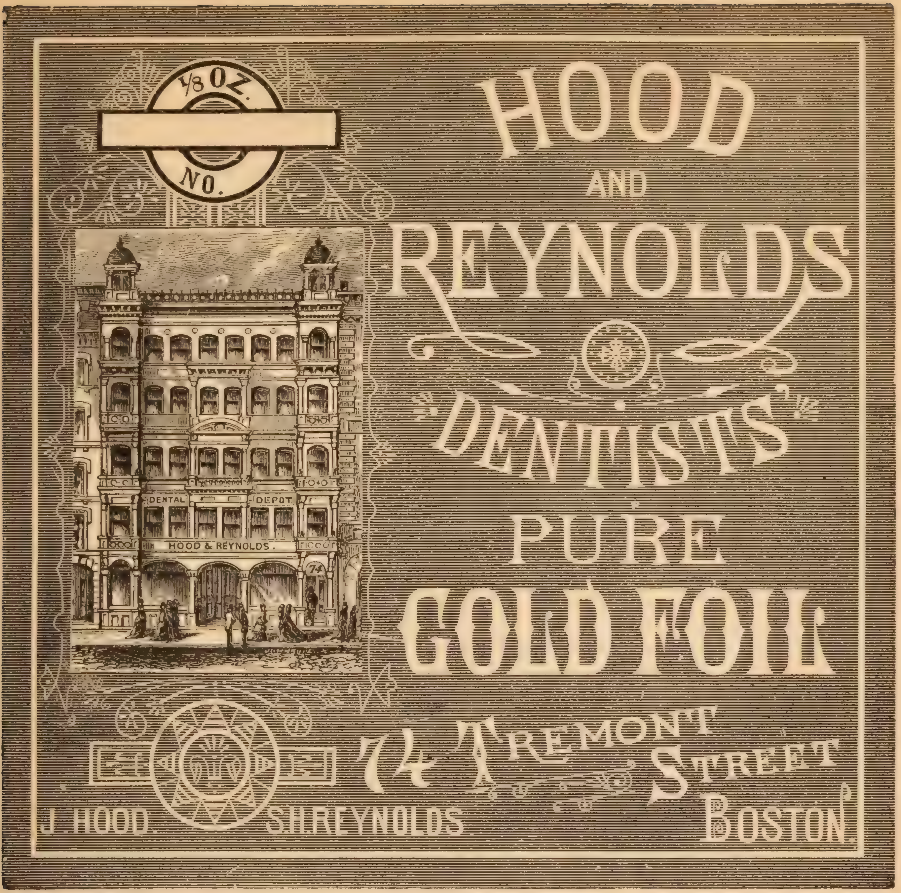

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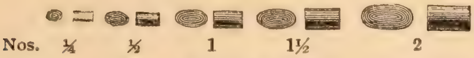

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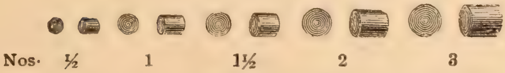

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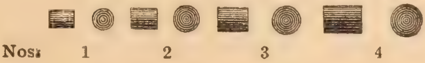

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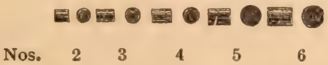

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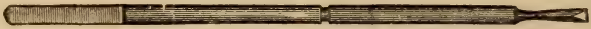

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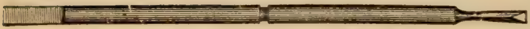

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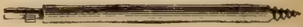

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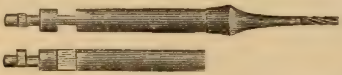

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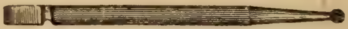

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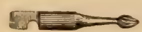

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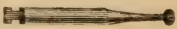

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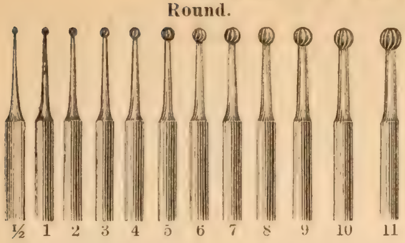

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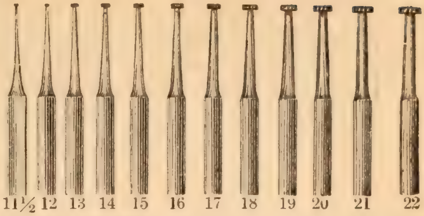

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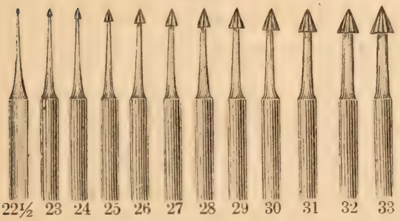

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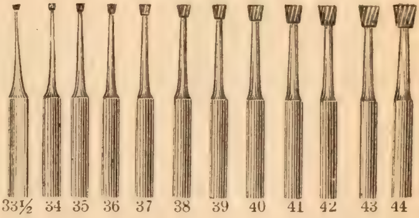

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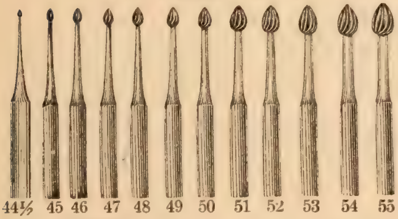

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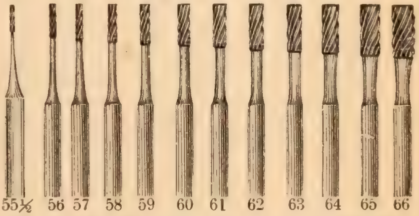

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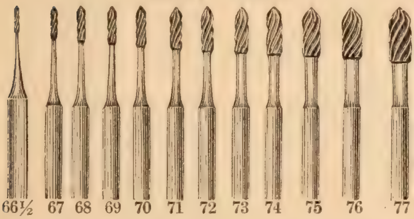

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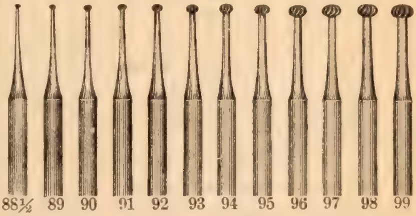

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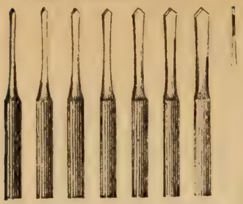
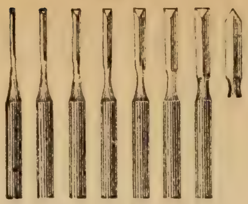


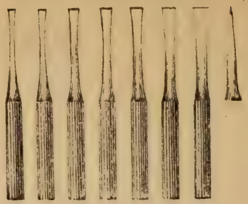
100. 101. 102. 103. 104. 105. 106.

Square.



107. 108. 109. 110. 111. 112. 113.

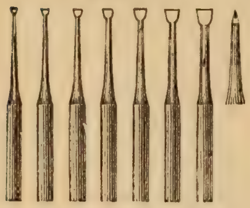
Flat, Square Point.



114. 115. 116. 117. 118. 119. 120.

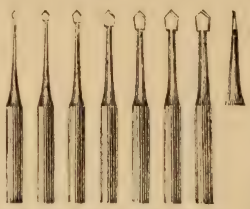
$2.00 doz.

Spade.



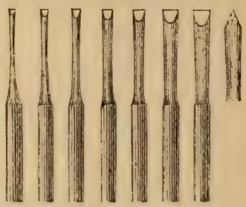
121. 122. 123. 124. 125. 126. 127.

Forbes's.



128. 129. 130. 131. 132. 133. 134.

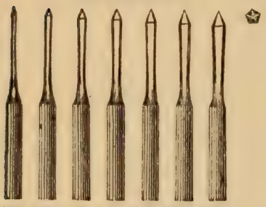
Round.



135. 136. 137. 138. 139. 140. 141

$2.00 doz.

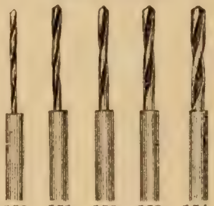
Five-Sided.



142. 143. 144. 145. 146. 147. 148.

$2.00 doz.

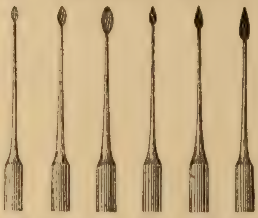
Twist Drills.



150. 151. 152. 153. 154.

$3.60 doz.

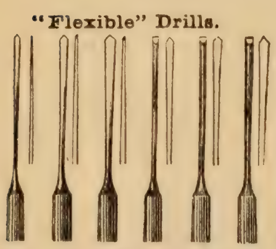
"Flexible" Burs.



155. 156. 157. 158. 159. 160.

$4.20 doz.

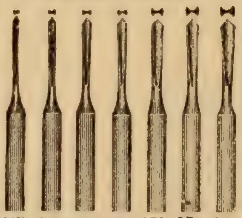
"Flexible" Drills.



161. 162. 163. 164. 165. 166.

$3.60 doz.

Ambler Drills.

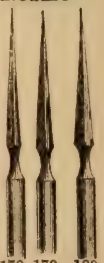


167. 168. 169. 170. 171. 172. 173

$2.25 doz.

The old forms of Nerve Cavity Drills, Nos. 174 to 177, have been superseded by the Improved Gates-Glidden Nerve-Canal Drills.—See page 13.

Talbot's Reamers.

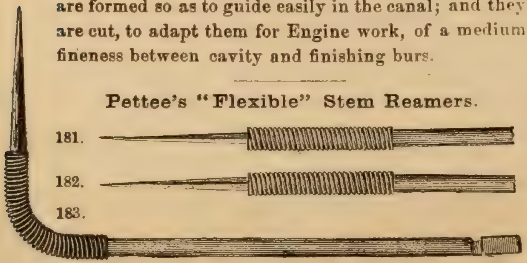


178. 179. 180.

$4.80 doz.

The "Flexible" Burs and Drills have spring-tempered stems, longer than regular stock. The bur-heads are formed so as to guide easily in the canal; and they are cut, to adapt them for Engine work, of a medium fineness between cavity and finishing burs.

Pettee's "Flexible" Stem Reamers.



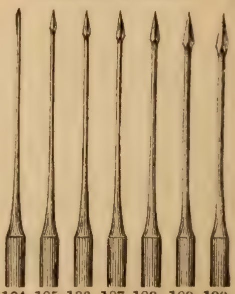
181.

182.

183.

75 c each.

Brewer's Drills.



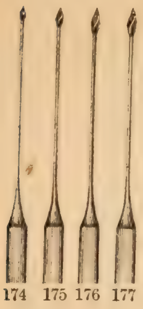
184. 185. 186. 187. 188. 189. 190.

$4.80 doz.

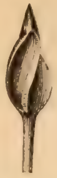
THE S. S. WHITE DENTAL MANUFACTURING CO.

Philadelphia, New York, Boston, Chicago, Brooklyn.

Improved Gates-Glidden Nerve-Canal Drills.



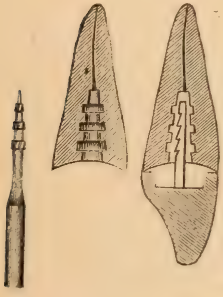
40 cents each.



In operating with these Drills it is to be observed that the smallest should be first used if the canal is narrow, because as will be seen in the magnified illustration, the Glidden guide-point does not cut to enlarge the canal, but will merely guide the Drill into a canal no wider than itself, until it reaches the root-apex, through which only the sharp point will pass, and produce a sensation of pain that gives notice of its protrusion; yet, unless the foramen is wider than the base of the guide, the Gates Drill *will not cut through* the end of the root, —a danger that the improved Drill was specially designed to avoid.

Using the series, one after the other, with care and judgment, even a tortuous canal may be suitably enlarged; but it should be kept in mind that many roots are thin at their apical portions, and their canals, if much enlarged, may be cut through laterally; hence the advisability of employing usually the smaller sizes of drills.

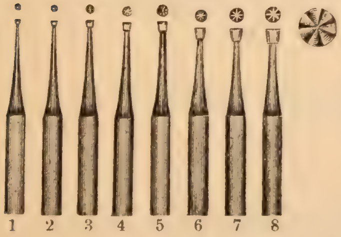
GROOVING-BUR ENGINE-BIT.



This Bur is intended for cutting grooves in the walls of root-canals to provide retaining points for plastic materials in setting porcelain crowns. The grooves are made by sweeping the Bur, while in motion, around the walls of the canal, which should be made large enough to permit the Bur end to reach the bottom of the cavity. Two or three grooves, as may be desired, can be cut in thin roots with safety, one size of the Bur answering for all cavities. The canal is then filled with gutta-percha, oxychloride, amalgam, or other plastic, and, before it sets, the barbed pin of the crown is inserted with the effect of forcing the material into the grooves, thus adding greatly to the strength of the operation. Only one size in stock.

Price - - - - - - - - - - each 40 cents.

SAFE-SIDE CAVITY BURS.



These Burs are designed for deepening and shaping cavities whose walls are thin and liable to fracture by a side-cutting bur like the square end fissure or the inverted cone. This will prove a very useful addition to our list of cavity burs.

The small Safe-side Bur will also cut in excellent form a flat-bottomed retaining-pit for starting a gold filling. The sizes are shown in the cuts.

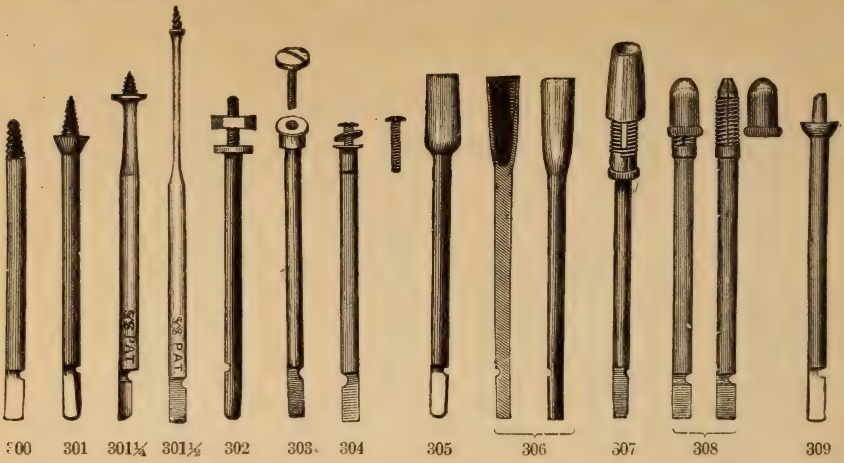
PRICES.

Safe-Side Burs	each	$0.20
" "	per doz.	2.25

THE S. S. WHITE DENTAL MANUFACTURING CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

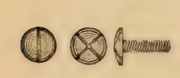
Mandrels, Porte-Polishers, Etc.



No. 300, Screw-Mandrel, without shoulder - - - - - - 7 cts.
" 301, " with shoulder - - - - - - 20 "
" 301¼, " " " - - - - - - 20 "
" 301½, " " " hardened and temp'd, Nickel-pl'd 20 "
" 302, Parting-Nut Mandrel, Right or Left-Hand, Nickel-plated - 25 "
" 303, Dr. Huey's Screw-Head Mandrel, Right or Left-Hand Screw 25 "

The Right-Hand Screw has a single slot; the Left-Hand, two slots.

This Mandrel, *with right-hand screw only*, is also made with spurs on the shoulder for holding sand-paper, rubber, and felt disks. Price, 35 cents.

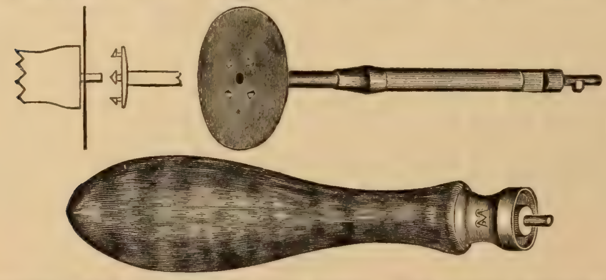


No. 304, Disk-Carrier Mandrel. With 2 Screws and Washer, complete 25 cts.
Extra Screws, each 5 cents. Extra Washers, each 1 cent.
No. 305, Porte-Polisher, Plain Socket - - - - - - - 25 "
" 306, " Screw Socket, Nickel-plated - - - 25 "
" 307, Dr. Klump's Screw-Clamp Porte-Polisher - - - - 35 "
" 308, Needle-Chuck for carrying very fine retaining-pit drills made from sewing-needles. Three sizes. A will hold firmly sizes 5 and 6, Smith's Sharps; B sizes 7 to 9; C sizes 10 to 12. Price, either size, $1.25.

A large-size Needle-Chuck for holding How's Twist-drills and Bits of similar calibre is now on sale. It is designated as "X." Price, each $1.25.

No. 309, Dr. Harris's Disk-Mandrel. For mounting corundum disks. In mounting disks warm the end of the Mandrel. Prich, each 20 cts.

MANDREL No. 310, WITH ADJUSTING HANDLE.



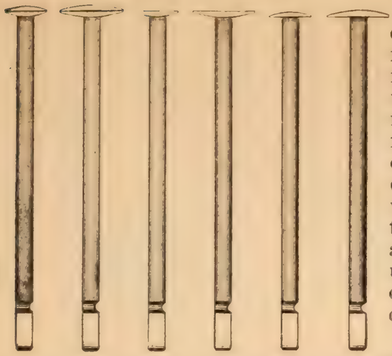
For mounting and carrying flexible disks. The quick method of application is shown in the sectional cut. When thus adjusted, the disk is held by the barbed spurs sufficiently firmly to be curved upon posterior approximal surfaces with but little danger of becoming detached. Price, complete, 80 cts.

Mandrel, separately - 50 cents. | Handle - - - 30 cents.

In ordering, please state the Hand-piece you wish them for.

DISK BURNISHERS.

Devised by Dr. G. O. SHAFER.



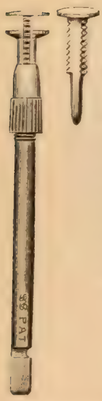
These Engine-bit burnishers are made of steel, and designed to condense and finish the surfaces, and especially the margins of fillings by a rotative action, which resembles that of the Herbst method, but condenses and adapts the material in an inward rather than an outward direction, and is peculiarly effective at the junction of the filling with the tooth. They are thin, for access to approximal fillings, and the various angles of their several faces fit them for use by pull or push pressure on fillings of every class without endangering frail cavity edges or walls.

There are two sizes each of three forms.

Nos. 1 and 2 are small and large Push or Pull Disks.
" 3 " 4 " " " " Pull Disks.
" 5 " 6 " " " " Push Disks.
Price, for either No. 4, 6, or 7 Hand-piece - each .50
In ordering state for which Hand-piece they are desired.

PAPER-DISK MANDREL No. 315.

Patented May 10, 1887.

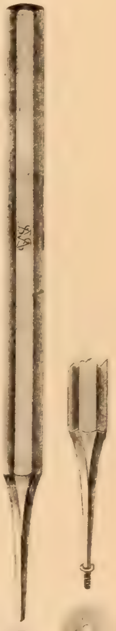


This Mandrel, invented by Dr. H. C. Register, has a feathered pin which passes through the paper disk, enters the slotted head of the Mandrel, and by means of the screw-thread on the edges of the feather, is engaged with the threaded sleeve which draws the head of the pin toward the head of the Mandrel, and firmly clamps the disk between them. It will run in either direction, and no manner of use will dislodge the disk without destroying it. The disk is easily and quickly removed by extending the thumb and finger of the hand which holds the hand-piece and grasping the milled sleeve while the Mandrel is revolving to the right.

The thickest or thinnest disk will be securely held.

Price - - - - - - each 50 cents.

In ordering state for which Hand-piece desired.



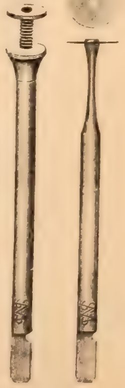
MANDRELS Nos. 313 and 314.

Suggested by Dr. S. G. PERRY.

No. 313 is practically the same as the Huey Mandrel No. 303, but instead of the screw having a slotted head it is drilled out in the center and squared so as to admit the pointed screw-driver, which fits the opening closely and prevents the loss of the screw. No. 314 works upon the same principle, but is much smaller and designed for carrying very small disks. The cuts are full size.

Mandrels Nos. 313 and 314 - - - each 30 cents.
Screw-Drivers - - - - - " 25 "

No. 314 was especially designed for Minim Disks.



The S. S. White Dental Mfg. Co.

PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

DIAMOND DRILLS.

Patented December 5, 1876; May 21, 1878; August 6, 1878.

These Drills are used for drilling cavities in porcelain teeth. They are not of our manufacture.

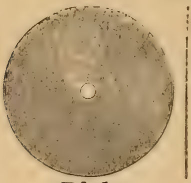
The points are mounted by the best diamond-workers that we can find, and they are sold without any guarantee, the purchaser assuming all risks.

Price for either Hand-piece - - - - - - - each $2.00

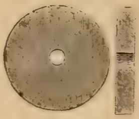
DIAMOND DISKS AND WHEELS.

DISKS PATENTED MAY 1, 1877.

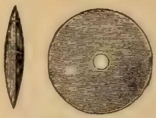
Reduction in Price of Disks.



Disk.



Wheel.
Square Edge.



Wheel.
Beveled Edge.

Diamond Disks possess decided advantages over corundum, paper, and other disks, because of their strength, thinness, and superior lasting qualities. We are supply them in various sizes, ranging from ⅝-inch to ⅞-inch in diameter.

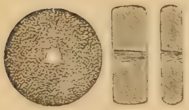
The Wheels are designed for heavy work, such as dressing down roots.

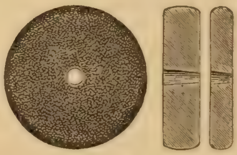
PRICES.

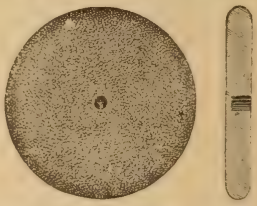
Diamond Disks - - - - - - - -	each	$1.50
" Wheels, Square Edge - - - - -	"	3.00
" " Beveled Edge - - - - -	"	2.00

Can be used on Mandrels Nos. 302, 303, 304, and 313.

"STUMP" CORUNDUM WHEELS.







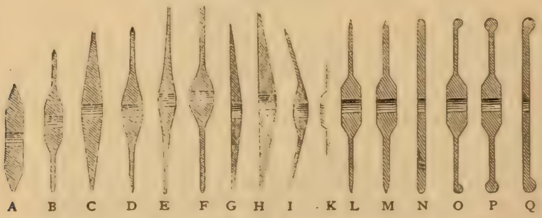
For the preparation of roots for pivoting and for cutting off projections of natural teeth. Three sizes: ½-inch, ¾-inch, and 1 inch in diameter; the thicknesses are shown in the sectional cuts.

Price, unmounted - - - -	each 13 cents;	per doz. $1.40
" mounted - - - -	" 20 "	" 2.15

Also made of very fine Corundum for polishing. When ordering for this purpose please state "for polishing"; otherwise the regular grit for cutting will be sent.

RUBBER AND CORUNDUM DISKS.

Patented December 3, 1872; July 2, 1878.

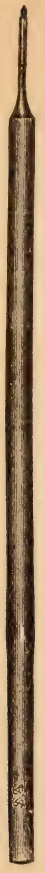


These Disks will be found excellent for separating teeth, because of their extreme thinness. They have all the strength necessary for the purpose. Made of vulcanized rubber and our sharpest selected disk-corundum, the latter being thoroughly incorporated with the former. Various sizes. Can be used on Mandrels Nos. 302, 303, 304, and 313.

Price - - - - - - - - - - each 25 cents.

No. 1.

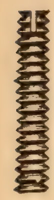
No. 3.



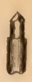
Anchor Screws and Appliances.

No. 2.

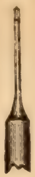
A



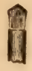
B



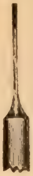
No. 4.



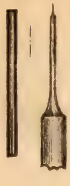
C



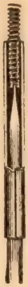
No. 5.



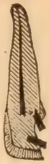
No. 6.



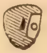
D



E



F



Cut No. 1 shows the size of the 18-karat Gold Anchor Screw.

No. 2. Iridio-Platinum Anchor Screw, same diameter, but longer than No. 1.

"A." Anchor Screw magnified to show thread and slot.

No. 3. The Starting or Center Drill will form a pit at the exact point desired; but if this point be not at first obtained, the pit center may be moved laterally while the drill is revolving.

"B." Point of Center Drill magnified.

No. 4. Limit or Anchor Drill; will bore only to the depth determined by the limit shoulder—half of the length of Screw No. 1.

"C." Point of Limit or Anchor Drill magnified.

No. 5. Screw-Tap; is probably the most perfectly formed tap of its size that has ever been put on the market, its diameter being only thirty one-thousandths (.030) of an inch.

No 6. Screw-Driver and sleeve which holds the screw for insertion or removal, as shown magnified at D.

"E" and "F" exemplify the Anchor Screw in gold contouring operations. A drilled and tapped hole to be filled with gold foil serves as a superior retaining point.

See February Dental Cosmos, 1887, page 92.

The Handles are made smooth to prevent a breaking twist or the stripping of the threads of dentine by excessive force in turning the tap.

PRICES.

No. 1.	Gold Anchor Screws - - - - - - -	each	$0.20
" 2.	Iridio-Platinum Anchor Screws - - -	"	.20
" 3.	Center Drill - - - - - - - -	"	.25
" 4.	Anchor Drill - - - - - - - -	"	.25
" 5.	Anchor Tap - - - - - - - -	"	.50
" 6.	Anchor Screw-Driver and Sleeve - - -		.30
The set of four instruments - - - - - -		per set	1.25

Center Drill No. 3 and Anchor Drill No. 4 are also made for use with engine.

Price - - - - - - - - - - - -	each	$0.25

In ordering state for which hand-piece they are desired.

ANCHOR SCREW WIRE.

In response to frequent inquiries we have now in stock Anchor Screw Wire in two-inch lengths. This wire is the same in diameter and thread as the Anchor Screw, and is exactly suited to the Anchor Tap No. 5, with which nuts may be tapped, and small regulating and other fixtures by these means be easily constructed. Short pieces of screw wire inserted on either side of a vulcanite regulating plate to pass between molars or bicuspids close to the gum will firmly hold the fixture in place.

Price, Anchor Screw Wire, Gold - - - -	per inch	$0.50
" " " " Iridio-Platinum - -	"	.40

THE S. S. WHITE DENTAL MANUFACTURING CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

SAMPLES FREE.

SAMPLE CARDS OF SIBLEY'S TEETH SENT FREE OF CHARGE ON APPLICATION.

Must be seen to be Appreciated.

EVERY DENTIST SHOULD HAVE ONE. SEND NAME AND ADDRESS TO

GIDEON SIBLEY,

13th and Fibert-Sts, PHILADELPHIA, PA.

MANUFACTURER OF

ARTIFICIAL TEETH

Unequalled in Strength, Density of Material and Durability

UNSURPASSED

In Conformation of Shapes, Shades, Articulation and Adaptation to the Natural Curves.

DON'T TAKE OUR WORD FOR IT BUT

Test these Teeth, as others have done, alternating with best makes known to you, and keep a record of breakage, and you will be surprised at the result.

Observe this Trade Mark on Gum Sections.

For Sale by Ransom & Randolph and all first class Dealers

"*NE PLUS ULTRA.*"

ESTABLISHED 1846.

PURE GOLD FOIL,

SOFT, MEDIUM AND COHESIVE,

in any number desired.

The "Soft" can be made *Cohesive* by re-annealing,

WE GUARANTEE IT

PURE, UNIFORM, TOUGH,
DUCTILE, MALLEABLE.

QUOTATIONS.

$4 per 1-8; $7.50 1-4; $15 1-2; $29 per oz.

If not kept by your dealer, send direct to

J. M. NEY & CO.,

Refiners and Assayers, HARTFORD, CONN.

—FOR SALE BY—

RANSOM & RANDOLPH, Toledo,

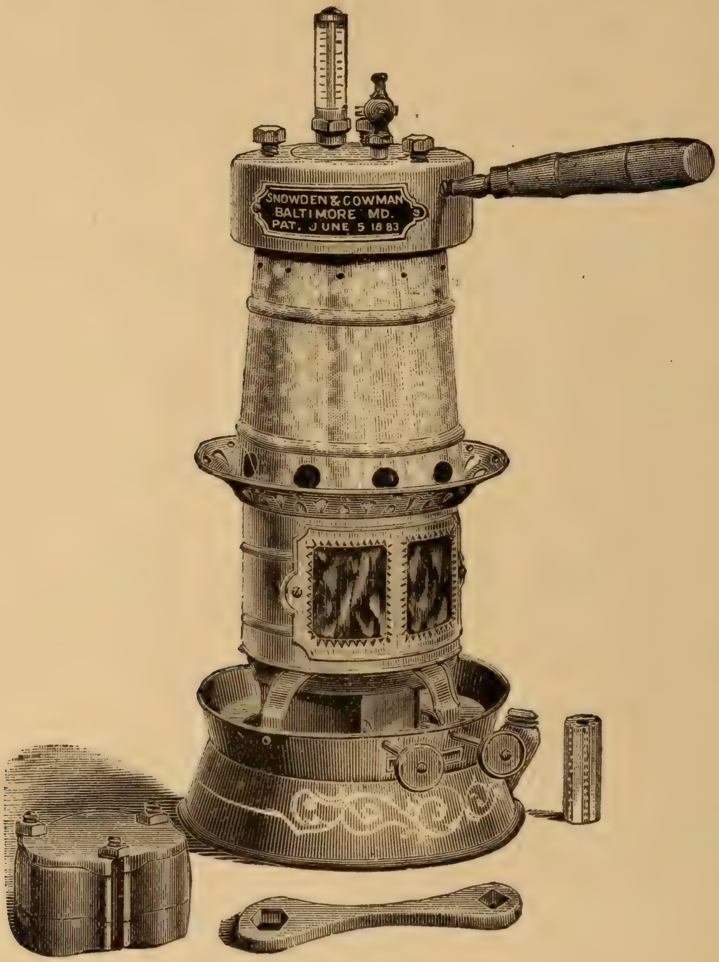
And Dental Depots and their Agents.

WE ALSO FURNISH

Gold, Silver and Aluminum Plate, Tin Foil and Amalgam, and pay CASH or EXCHANGE for Gold and Silver Scraps of all kinds.

SNOWDEN & COWMAN'S

New Patent Vulcanizer.



PRICE:

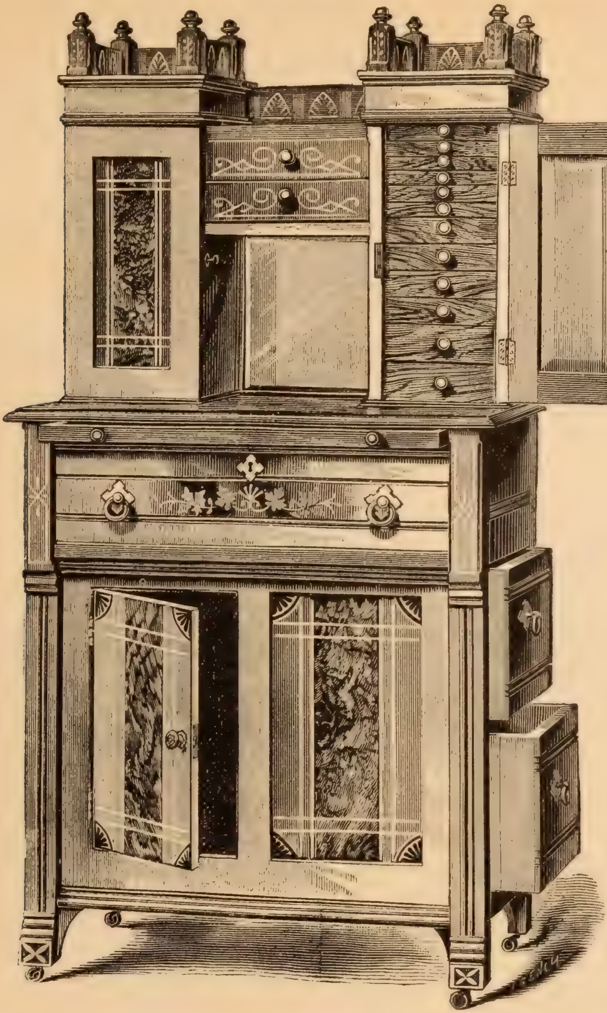
Complete for Kerosene or Gas, with two Large Malleable Iron Flasks, - - - - - - - $18.00

Manufactured and For Sale by

SNOWDEN & COWMAN,
86 WEST FAYETTE STREET,
BALTIMORE, MD.

Circulars furnished on application.

Improved Cabinet Case No. 10.



This Cabinet Case is made of black walnut, hard oil finish. The panels are French veneer, and the mountings are all nickel plated. The total height is 5 feet 2 inches; width 31 inches; depth 20 inches. The upper portion has 12 drawers, 7½ x 7½; 6 of these are ½ inch deep; 4, 1¾ inches deep; 2, 2½ inches deep. A door closes over all these drawers. On the opposite side is space same size, with adjustable shelves for medicines. Connecting the two parts above are 2 drawers, 10¾ x 12½, by 3 inches deep. Below these drawers is a beveled plate mirror, 10 x 10. The lower portion contains one drawer in front, 25 x 16, 5 inches deep, with slide drawer over it 25 x 16⅓ by ½ inches deep, lined with felt cloth. At one end, 2 drawers, 14½ x 13½, 9 inches deep. In front is a closet, 20 x 16, 12 inches deep, with shelf.

PRICE, with Wood Top (Boxing Free) - -	$45.00.
" With Italian Marble Slab, (white) -	50.00.
" " Knoxville Marble, (pink) -	50.00.

Manufactured by RANSOM & RANDOLPH, Toledo, Ohio.

BRANCH: 29 Circle Street, Indianapolis, Ind.

R. S. WILLIAMS,

MANUFACTURER OF

STANDARD COHESIVE GOLD FOIL,
STANDARD MEDIUM GOLD FOIL,
STANDARD SOFT GOLD FOIL,
STANDARD CORRUGATED GOLD FOIL,
STANDARD CRYSTAL SURFACE GOLD (Rolled),
STANDARD UNTRIMMED GOLD FOIL (Cohesive),
STANDARD UNTRIMMED GOLD FOIL (Soft).

STANDARD GOLD CYLINDERS, Styles A, B & C.

NON TIPPING GOLD CYLINDERS (Cohesive),
NON TIPPING GOLD CYLINDERS (Soft),
BURNISH GOLD CYLINDERS (Cohesive),
BURNISH GOLD CYLINDERS (Soft).

RECTANGULAR GOLD PELLETS.

SIZES 1 2 3 4 5 6

NON TIPPING GOLD BLOCKS,
FOLDED GOLD FOIL,
GOLD AND PLATINA, FOR FILLING (Folds and Rolled).

ELECTRIC GOLD, (Cohesive)—ALWAYS RELIABLE.

STANDARD TIN FOIL AND CYLINDERS,
GOLD LIGATURE WIRE,
AMALGAM ALLOY, No. 1.

GOLD PLATE, SOLDERS, WIRE, ETC.
PLATINA PLATE AND WIRE (Hard and Soft,) } For Crown and Bridge Work.

115 WEST 42d STREET,

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For sale by RANSOM & RANDOLPH,
TOLEDO, O., and INDIANAPOLIS, IND

The Wilmington Dental Manufacturing Co.

MANUFACTURERS OF SUPERIOR

ARTIFICIAL TEETH,

MANUFACTURERS OF AND DEALERS IN

DENTAL SUPPLIES,

NOS. 1010 AND 1012 KING STREET,

WILMINGTON, DELAWARE.

We would respectfully call the attention of the Dental profession to our line of DENTAL SPECIALTIES, more particularly our

ARTIFICIAL TEETH.

Their merits universally acknowledged by all who have used them.
We solicit comparison with any in the market.
Ask your dealer for them or send for *samples* and information to

THE WILMINGTON DENTAL MANUFACTURING CO.,
Wilmington, Delaware.

WM. VALLEAU, Jr.,

MANUFACTURER OF

Dental Gold Foils, Amalgams, &c.

DENTAL FILLING, &c.

506 Broome Street, New York City.

Soft and Cohesive Gold Cylinders

IN FOUR SIZES AND FOUR NUMBERS.

The letters denote the size, and the number denotes the number of the foil it is cut from.

No. 1 is cut from 1 sheet of No. 2, rolled.
" 2 " " " 1 " " " 3, "
" 3 " " " 1 " " " 4, "
" 4 " " " 2 sheets " " 2, "

Cylinders cut to order from any number foil.

PRICES OF GOLD FOILS:

Soft and Cohesive Foil	$30.00 per oz.
" " " "	15.00 " ½ "
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We claim for all our foils that they are made of *absolutely pure* gold, and beaten with the greatest care to produce uniformity and toughness, never losing sight of quality for the sake of cheapness. The best makers have demonstrated that *absolutely pure* gold cannot be made cheap.

All goods can be returned if not as represented.

Sold by RANSOM & RANDOLPH, Toledo, O.
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QUALITY
TRADE MARK
AMERICAN DENTAL MFG. CO.
NEW YORK
RELIABILITY

AMERICAN DENTAL M'F'G CO.
NEW YORK,
BROADWAY, CORNER 37th STREET,
MANUFACTURERS OF
FINE INSTRUMENTS,
FILLING MATERIALS, &C.

If you cannot obtain our goods from your dealer, a direct order to us, with remittance, will receive prompt attention.

WRITE FOR CATALOGUE.

Office and Salesroom 1298 & 1300 Broadway.

AKRON
DENTAL RUBBER.

The material of which this Rubber is composed is prepared by new processes, which insure

ABSOLUTE PURITY,

Resulting in a product of wonderful Density, Firmness and Strength. It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without danger of splitting or crumbling away about the edges. It can be used with the best results for making partial lower dentures, an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere and never fails to give satisfaction. It will cost you nothing to try it. Send for samples and prices,

AKRON RUBBER WORKS,
AKRON, OHIO.

For Sale by all Dental Depots.

A. R. LUKENS. Established 1866. J. WHITTINGTON.

LUKENS & WHITTINGTON,

OUR
Instruments
Are Warranted
First Class

All kinds of
Repairing
Carefully
attended to.

SEND for PRICE LIST

DENTAL
Supplies
of All Kinds.

ORDERS
Will Receive
Prompt
Attention.

626 Race Street, PHILADELPHIA, PA.

Phosphate of Zinc Cement.

PREPARED BY

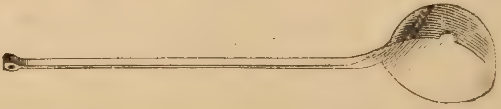
DR. C. N. PEIRCE,

The properties of this Cement have been well tested and not found wanting. It does not deteriorate with age. Directions accompany each package. It can be procured of dealers in dental supplies, and in quantity of the S. S. White Dental Manufacturing Co., Johnson & Lund, and of the manufacturer, 1415 Walnut Street, Philadelphia.

Price per Package, $2.00.

Liberal discount to the trade. For Sale by RANSOM & RANDOLPH,
Toledo, Ohio, & Indianapolis, Ind.

Wrought Iron Melting Ladle.



Size suitable for Watt's Metal, ...	35 cents.
If sent by mail, postage	10 "

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SAMSON RUBBER

MANUFACTURED BY

EUGENE DOHERTY,

No. 444 FIRST STREET, BROOKLYN, E. D., NEW YORK.

WARRANTED TO BE

The Strongest, Toughest & Most Uniform Rubber Manufactured

It is the Toughest and Most Durable Rubber Made, Vulcanizes same as Ordinary Rubber.

MANUFACTURER OF ALL KINDS OF

Dental Rubbers and Gutta Perchas.

REDUCED PRICES.

Price List of Dental Rubbers and Gutta Perchas.

No. 1 Rubber, per lb.	$2 25
No. 2 Rubber, per lb.	2 25
Samson Rubber, per lb.	2 75
Black Rubber, per lb.	2 25
Flexible or Palate Rubber, per lb	2 75
Gutta Percha for Base Plates, per lb.	2 25
Vulcanite Gutta Percha, per lb.	3 50
No. 1 Weighted or Amalgamated Rubber, per lb.	$4 00
No. 2 Weighted or Amalgamated Rubber, per lb.	4 00
Black Weighted or Amalgamated Rubber, per lb.	4 00
Adamantine Filling or Stopping, per oz.	4 00

NOTE.—The above Rubbers and Gutta Perchas will be furnished in pound or half-pound packages to any Dentist in the country on receipt of price, **with a discount of 10 per cent. on 10 pound packages,** and stating that they cannot get them at the Dental Depots in or near their places of business. Circulars giving full instructions how to use all of my Rubbers and Gutta Perchas, will be found in each box or package with the article ordered.

EUGENE DOHERTY,
417 & 419 KENT AVE., BROOKLYN, E. D., NEW YORK.

CAULK'S FILLING MATERIALS.

ESTABLISHED, 1877.

CAULK'S
TRADE
DIAMOND
MARK
CEMENT
CAULK'S DIAMOND CEMENT
AND OTHER DENTAL PURPOSES.
EXCELLENT FOR LINING CAVITIES
MOUNTING ARTIFICIAL CROWNS.
FOR FILLING TEETH,

GRAY.	YELLOW.	LIQUID.	MEDIUM.	LIGHT.

Four Colors and Liquid.—Gray, Yellow, Medium and Light, $2.00 per Pkg.
Two Colors and Liquid.—Gray and Yellow, - - - - 1.50 " "
One Color and Liquid.—Gray, Yellow, Medium, Light or Gum, 1.00 " "

THIS COMPOUND STANDS WITHOUT A RIVAL.

Used for TEN years by Leading Dentists throughout the world.

Diamond Cement should not be classed with the so-called oxy-phosphates, as is often the case—the materials of which it is composed and its process of manufacture being entirely different—hence its **Superiority**.

It Hardens in Water or Saliva. Two or more colors blended together (in mixing) will produce any shade desired.

Caulk's Par-Excellence Alloy.

This Gold and Platina Alloy is manufactured on a new principle. Saves teeth where others fail. It is the result of a long series of experiments, and has been in constant use for TEN years. By our NEW METHOD of manufacture, there is no *guesswork*, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

Price, in ⅓, ½, and 1 ounce packages, - - - per ounce $3.00; two ounces $5.00

Caulk's White Alloy

Has been greatly improved. There is nothing equal or superior to it. Is of a peculiar grayish-white color. When properly manipulated with our Purified Mercury it will retain its color under all circumstances.

Price, ¼, ½, and 1 ounce packages, - - - - per ounce, $4 00; 2 ounces, $7.00

Caulk's Diamond Point Stopping and Gutta-Percha Points for Filling Roots.

Price, in ⅛, ¼, ½ and 1 ounce packages, - - - per ounce, (reduced to) $2.00.

All of Caulk's Filling Materials are sold by Troy Weight and sent by mail.

Over fifteen thousand (15,000) dentists are using these materials throughout the civilized world. What better evidence do you wish of their superiority and excellence?

Orders for DENTAL GOODS will receive prompt attention.

L. D. CAULK, Manufacturer,

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Laboratory,
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ANY SUBSCRIBER

Either new or old, who sends us $3.75 cash will get

The ⁑ Dental ⁑ Register

FOR THE YEAR 1888,

AND IN ADDITION A COPY OF

DR. STOWELL'S

Atlas of the Microscopic Anatomy of the Human Teeth

CONTAINING 64 CUTS,

Representing Every Tissue of the Teeth, under High Magnification some of these are as High as One Thousand Diameters, and are so plain that anyone can understand perfectly all these Structures without the Aid of the Microscope.

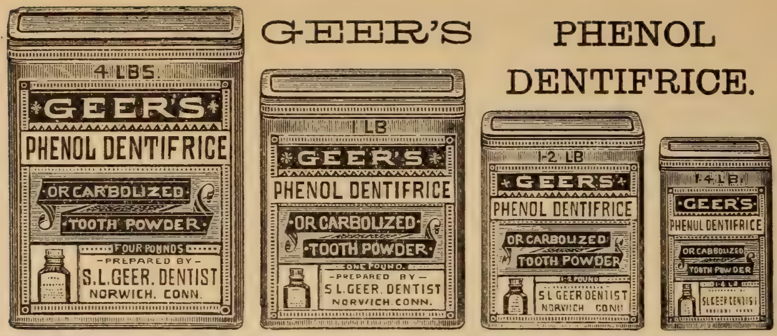
Dr. Stowell's reputation is sufficient to give all the recommendation necessary as to the accuracy of the work: to say it is absolutely perfect is no exaggeration.

The work shows in beautiful form (in addition to Dr. Stowell's work) a number of abnormal teeth from Dr. J. Tait's collection. It is printed on the best of paper and bound in morocco.

The atlas is in form of a portfolio, measuring 12x16 inches; some of the anatomical cuts measuring thirteen inches in length. Each cut accompanied with ample description.

Send your Subscription for the "Register" and you will receive in addition to the "Register" a copy of this superb work.

SAM'L A. CROCKER & CO.,
Ohio Dental and Surgical Depot,
117, 119 & 121 W. 5th St., CINCINNATI, OHIO.



GEER'S PHENOL DENTIFRICE.

CARBOLIZED TOOTH POWDER.

This preparation is of inestimable value in *preserving* and *beautifying* the Teeth, *strengthening* the Gums and giving pleasant fragrance to the Breath. It prevents and arrests decay, polishes and preserves the enamel to which it imparts a pearl-like whiteness. Its unprecedented success for ten years shows the universal favor in which it is held, while the fact of its being compounded of the choicest materials, selected with extreme care, constitutes it the purest and safest tooth powder now in use. Put up in

4, 1, ½ and ¼ ℔. Cans.	$1 ℘ ℔.
Trial Package, ⅛℔., postpaid for 15 cents.	10 ℔s., 90 cents ℘ ℔.
	20 " 80 " " "

Sold by RANSOM & RANDOLPH,

Wholesale and Retail,

Toledo, Ohio, and Indianapolis, Ind.

UNIVERSITY OF PENNSYLVANIA.

DENTAL DEPARTMENT.

This department will open the first Monday in September.

The *Regular* or *Winter* session will begin the first Monday in October. The Commencement will take place May 1, 1888.

QUALIFICATIONS FOR GRADUATION.—The Candidate must be 21 years of age. Two full courses of lectures at the *Regular* or *Winter Session* will be required. Students who have attended one full term in another dental school, recognized by the faculty, will be admitted to the graduating class upon presentation of the required certificate.

Students holding a medical diploma can enter the senior class, but will be required to spend a year in the practical departments,—the year to include the regular winter's course.

A preliminary examination in English branches will be required for entrance to the junior year. This will not be demanded of those presenting properly attested certificates from colleges or recognized schools.

EXPENSES.—The *total fees* of the department are $245.00. There is but one general ticket issued which admits to all lectures and practical work. Each student is required to provide his own instruments, except those used for extracting.

Board can be procured in the neighborhood at prices ranging from $4 to $7.

MATRICULATION, FIRST YEAR	$5 00
GENERAL TICKET	100.00
TOTAL	$105.00

SECOND YEAR, GENERAL TICKET	$100.00
DISSECTING "	10.00
GRADUATION "	30.00
TOTAL	$140.00
FOR EACH ADDITIONAL YEAR	$100.00

Those desiring further information will apply to **JAMES TRUMAN, D.D.S.**

Secretary Department of Dentistry, of the University of Pennsylvania.

Thirty-sixth Street and Woodland Avenue, PHILADELPHIA.

THE DENTAL COLLEGE

OF THE

UNIVERSITY OF MICHIGAN.

The Eleventh Annual Session of this Institution commences on the 1st of October and closes on the last Wednesday of June, thus making a course of nine months. The regular course of instruction begins at once, and will proceed through the term, with the customary vacation.

The students in this department will receive instruction in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics, and Surgery, from the Professors of their respective branches in the *Department of Medicine and Surgery* of the University, when lectures commence, and continue the same as with the Dental College. There will also, in addition, be a special course upon each of these branches, which will embrace from ten to fifteen lectures.

FACULTY OF THE DENTAL DEPARTMENT.

J. B. Angell, LL.D.,	President
J. Taft, M.D., D.D.S.,	Principles and Practice of Operative Dentistry
Corydon L. Ford, M.D., D.D.S.,	Anatomy and Physiology
J. A. Watling, D.D.S.,	Clinical Dentistry
W. H. Dorrance, D.D.S.,	Prosthetic Dentistry
Elsie A. Hallock, D.D.S.,	Demonstrator of Clinical Dentistry

Special instruction will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and Diseases of Women and Children, with reference to the teeth.

Students should be promptly present at the College Wednesday Sept. 30th, to take the preliminary examination, and make arrangements for entering upon regular work. Seats in the lecture room are assigned to students in the order of registration on the Steward's Books; and each student is expected to occupy during the session such seat as he may select. Students, on arriving in Ann Arbor, should call at the Steward's office.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age. *He must furnish satisfactory evidence of good moral character.*

He must devote three years to the study of his profession. He must attend two full courses of lectures in the Dental College, or one in some college having an equal standard of requirements, and the last one here, and we recommend that he attend three courses regularly.

He must sustain an examination satisfactory to the Faculty in all the branches taught.

A graduate of the Medical College may enter the Senior Class, and, if found qualified, may graduate after two years have been devoted to the study of dentistry.

FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows:

Residents of Michigan.—Matriculation fee, $10.00; annual dues, $25.00.

Non-Residents.—Matriculation, $25.00; annual dues, $35.00.

Graduation Fee.—For all alike, $10.00. The admission fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual dues are paid the first year and every year thereafter while at the University.

For further particulars, address the Dean of the Dental College, Ann Arbor, Mich.

J. TAFT, Dean.

Northwestern College of Dental Surgery

SOUTHEAST COR. WABASH AV. AND TWELFTH STREET,

CHICAGO, ILL.

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BYRON D. PALMER, D.D.S., Professor of Prosthetic Dentistry.

M. STOUT, D.D.S., Professor of Clinical Dentistry.

NORMAN J. ROBERTS, D.D.S., Professor of Oral Surgery.

J. E. HEQUEMBOURG, M.D., Professor of Anatomy and Principles and Practice of Surgery and Surgical Pathology.

F. C. CALDWELL, M.D., Professor of Materia Medica.

J. H. SALISBURY, M.D., Professor of Chemistry.

J. H. LYON, M.D., Professor of Dental Pathology.

Announcement for the Course of 1887-8.

On Tuesday, October 4, 1887, the Northwestern College of Dental Surgery commences its Third Annual Session; and, in the interest of advanced education in the Dental Profession, the Directors have decided to extend the school year from the present course of six months to one of nine months, thus giving a longer time for study and practical instruction and avoiding the crowding necessary in a shorter term.

From its first foundation this college has succeeded far beyond the hopes of its founders and the most sanguine expectations of its friends, and the number and character of its students have exceeded all anticipations. While we feel justified in saying that from its organization the facilities and opportunities for securing a dental education in it have been equal to any other similar institution of learning in the country, we are equally aware that the profession and the people would justly have more confidence in the scholarship and capabilities of graduates of a dental college that requires two terms of nine months each, than they would have in the graduates of a college that requires two terms of but four or five months' attendance at most, with a preliminary term of a month or two, the attendance upon which is optional with the student. The motive for this change is one only of professional and public interest; but we expect it will meet with the commendation of both. The outlines of the course of instruction, which is a graded one so arranged as to take the student, step by step, through all the branches of medical and dental theory and practical work to a high standard of professional skill, will be found in the annual announcement, which will be furnished upon application.

The clinics of this College—owing to its favorable location, and the high reputation attained by its clinical professors and demonstrators in the treatment of oral diseases, and the minor operations in dentistry—are the most largely attended of any of the dental colleges of the country; and the infinite variety of operations which a population of over 700,000 offers, renders the experience gained in the clinic rooms of this College invaluable to the student and practitioner.

Every candidate for admission must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the college, or of some other recognized college or university, or a graduate of some recognized academy or high school, or holding a teacher's certificate, he must pass an examination in Arithmetic, Geography, English Grammar and Composition, United States History, and Natural Philosophy. (After July 1, 1887, in Elementary Chemistry.) He shall subscribe to Article II., Section 3, of the Code of Ethics of the American Dental Association.

The candidate for the degree of Doctor of Dental Surgery must have attained the age of twenty-one years. He shall have passed a satisfactory examination, both oral and written—a written examination being substituted in this college for a thesis. He shall have studied dentistry three years, including two courses of lectures, one of which shall be at this institution. Graduates in medicine may apply for the degree of D.D.S., after having had two full years of practical instruction or experience in dentistry, one year of which, including one course of lectures, must be spent in the college. After these requirements have been complied with, upon recommendation of the Faculty and approval by the Board of Directors, the candidate will receive the degree of Doctor of Dental Surgery.

FEES.

For the first year a student is a member of the college the fee is $100, payable in two installments of $75 and $25; for the second year $100, in payments of $60 and $40; for any subsequent year, $50. There are no other fees, either for matriculation, demonstration, or diploma, the above covering all the tuition and graduation fees of the complete course.

For information, address
F. H. B. McDOWELL, *Secretary*,
1201 Wabash Avenue, Chicago, Ill.

Indiana Dental College.

The regular term of the Indiana Dental College will begin Tuesday, October 4, 1887, and will close in March, 1888.

EXECUTIVE BOARD.

W. L. Hieskell, D.D.S.,	President
Merit Wells, D.D.S.,	Treasurer
J. E. Cravens, D.D.S.,	Secretary

FACULTY.

John H. Oliver, M.D., Professor of Anatomy, Oral Pathology and Surgery.

Junius E. Cravens, D.D.S., Professor of Operative Dentistry, Dental Pathology and Therapeutics. Superintendent of Dental Infirmary.

Leroy S. Henthorne, M.D., - - - - - Professor of Physiology.

John N. Hurty, M.D., Professor of Chemistry, Materia Medica, and Superintendent of Chemical Laboratory.

Thomas S. Hacker, D.D.S., Professor of Mechanical Dentistry, Oral Deformities, and Superintendent of Mechanical Laboratory.

SPECIAL

Lectures or Clinics, by S. B. Brown, D.D.S., Fort Wayne, Ethics of the Profession, Written and Unwritten.

Merit Wells, D.D.S., Indianapolis, Conduct of Dental Practice.

W. N. Wilson, D.D.S., Richmond, Pulpless Teeth, Putrescent Pulps, etc.

S. T. Kirk, D.D.S., Kokomo, Filling with Non-Cohesive Gold, Preparation of the Material for Filling, etc.

M. H. Chappell, D.D.S., Knightstown, Oral Deformities, Irregularities of the Teeth.

A. W. Brayton, M.D., Indianapolis, The Teeth of Fish, Reptiles, etc.

An ample corps of Demonstrators of Practical Dentistry will be supplied.

The students of this college will be admitted to the Clinical Lectures at the City Hospital throughout the term. Arrangements have been made for Dental and Oral Surgery Clinics at the Hospital.

Good board near the college may be obtained for $4.00 to $5.00 per week, including rooms, fuel and light.

Tuition complete, one term, - - - - - - - $100.

No extras. All materials free.

For announcements and special information, address,

J. E. CRAVENS, Secretary,
201 North Pennsylvania Street,
Indianapolis,
Ind.

1845. 1887.

Ohio College of Dental Surgery.

CINCINNATI, OHIO.

SESSION 1887-8.

FACULTY.

J. S. Cassidy, M.D., D.D.S., Professor of Chemistry and Materia Medica.

H. A. Smith, D.D.S., Dean of the Faculty, Professor of Operative Dentistry and Dental Pathology.

C. M. Wright, D.D.S., - Professor of Physiology and General Pathology.

Wm. Knight, M.D., D.D.S., - Professor of Anatomy and Oral Surgery.

Grant Mollyneaux, D.D.S., Professor of Mechanical Dentistry and Metallurgy.

Geo. W. Keely, D.D.S., - - Lecturer on Irregularities of the Teeth.

Otto Arnold, D.D.S., - - - - - - Lecturer on Anæsthetics.

DEMONSTRATORS.

A. T. Olmsted, D.D.S., - - - Demonstrator of Operative Dentistry.

B. C. Hinkley, D.D.S., - Ass't " " "

Jas. Silcott, D.D.S., - - - Demonstrator of Mechanical Dentistry.

G. S. Junkerman, M.D., D.D.S., - Demonstrator of Analytical Chemistry.

H. C. Matlack, D.D.S., - - - - - Demonstrator of Anatomy.

C. H. Martin, D.D.S., - - Assistant to Department of Orthodontia.

The Forty-Second Annual Winter Session begins Tuesday, October 4, 1887, and continues uninterruptedly through five months.

At the close of the regular Session a Spring Course of practical instruction will be inaugurated.

Requirements for Admission and Graduation are those adopted by the National Association of Dental Faculties.

TUITION FEES:

Matriculation Fee (but once)	$ 5 00
Professors' Tickets for first session	75 00
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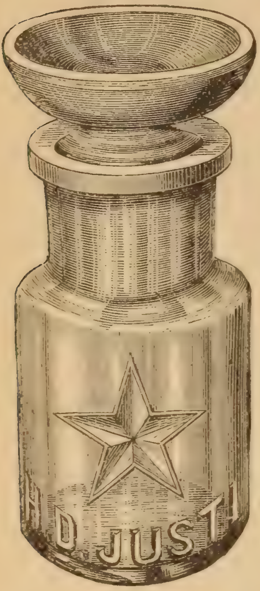

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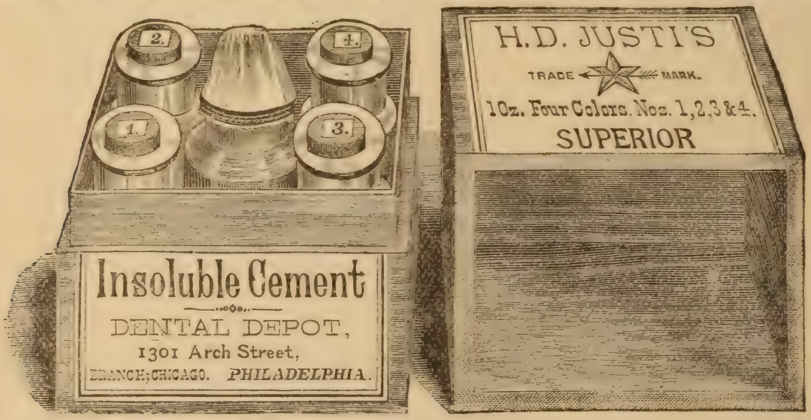

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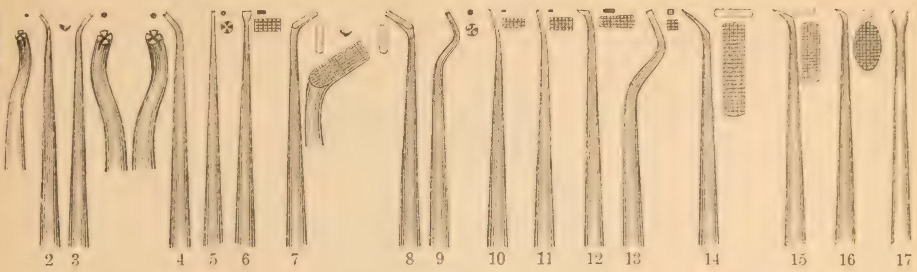

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GEORGE WATT, M. D., D. D. S.,
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L. P. BETHEL, D. D. S.,
TOLEDO, OHIO.

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